

SOIL SURVEY

Lee County South Carolina



UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

HOW TO USE THE SOIL SURVEY REPORT

THIS SURVEY of Lee County will serve several groups of readers. It will help farmers to plan the kind of management that will protect their soils and provide good yields; assist engineers in selecting sites for roads, buildings, ponds, and other structures; serve as a reference for students and teachers; aid foresters in managing woodlands; help county planning and development boards to decide on future development; and add to our knowledge of soils.

Locating the soils

The index to map sheets at the back of the report will help you locate areas on the detailed soil map. The index is a small map of the county that shows the part of the county included on each sheet of the detailed soil map. To locate your farm on this index map, look for roads, streams, towns, and other familiar landmarks.

When you have found the right sheet of the soil map, you will note that the soil areas are outlined in red and that each soil is designated by a red symbol. All areas marked with the same symbol are the same kind of soil. Suppose, for example, an area on the map has the symbol No8. The legend for the detailed map shows that this symbol identifies Norfolk loamy sand, 2 to 6 percent slopes. This soil and all the other soils mapped in the county are described in the section "Descriptions of the Soils."

Finding information

Different parts of this report will be of particular interest to different groups of readers.

Farmers and those who work with farmers can learn about the soils in the section "Descriptions of the Soils" and about their use for cultivated crops in "Capability Groups of Soils" and in "Estimated Yields and Crop Suitability." The soils are grouped by capability units, that is, groups of soils that need similar man-

agement and respond in about the same way. Norfolk loamy sand, 2 to 6 percent slopes, for example, is in capability unit IIe-1. Suggestions for the management of this soil are given under the heading "Capability unit IIe-1" in the section "Management by Capability Units." In the section "Estimated Yields and Crop Suitability," the yields of specified crops that can be expected under two levels of management are given. The relative suitability of the soils for various crops is given also.

Persons who need only a general idea of the soils can refer to the section "General Soil Map." This section tells briefly about the principal patterns of soils in the county and how they differ from each other.

Those who are concerned with growing trees will find in the section "Use of the Soils for Woodland" information about the suitability of the soils for the production of trees of commercial value.

Engineers, builders, and county planners will find useful information in the section "Engineering Properties of the Soils."

Soil scientists and others interested in the nature of soils will find information about how the soils were formed and how they are classified in the section "Formation, Morphology, and Classification of the Soils."

Students, teachers, and other users will find various parts of the report useful, depending on their particular interests.

The "Guide to Mapping Units," which is at the back of the report, shows where information about each particular use of the soils can be found in the report.

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This soil survey was made as a part of the technical assistance furnished by the Soil Conservation Service to the Lee County Soil Conservation District. Fieldwork for the survey was finished in 1959. Unless otherwise indicated, all statements in the report refer to conditions in the county at the time the fieldwork was in progress.

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SOIL SURVEY OF LEE COUNTY, SOUTH CAROLINA

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SOILS SURVEYED BY FRANCIS L. GREEN, W. LEE COLBURN, F. F. LESENE, C. M. ELLERBE, AND O. L. DODD,
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UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION

LEE COUNTY is an agricultural county. The chief crops are cotton, tobacco, soybeans, and small grains. Corn and hay are grown as feed for livestock, and corn is gaining also as a cash crop. About 40 percent of the county is in woods, and forest products form an important secondary source of income.

The county is in the northeastern part of South Carolina in the Atlantic Coastal Plain (fig. 1). It has a total

ing and moderately sloping ridges that are moderately well drained. Except for some well-drained ridges, 6 to 20 feet high and one-eighth of a mile to 2 miles wide, that run parallel to the stream courses, much of the southern part of the county is poorly drained. Most of the streams start in the hill country, and they become very crooked and sluggish in the southern part of the county.

How Soils are Named, Mapped, and Classified

Soil scientists made this survey to learn the kinds of soils in Lee County, where they are located, and how they can be used.

They went into the county knowing they likely would find many soils they had already seen, and perhaps some they had not. As they traveled over the county, they observed steepness, length, and shape of slopes; size and speed of streams; kinds of native plants or crops; kinds of rock; and many facts about the soils. They dug or bored many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down to the parent material that has not been changed much by leaching or by roots of plants.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to uniform procedures. To use this report efficiently, it is necessary to know the kinds of groupings most used in a local soil classification.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, the major horizons of all the soils of one series are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Norfolk and Portsmouth, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in natural characteristics.

Many series contain soils that differ in the texture of their surface layer. According to such differences, separations called soil types are made. Within a series, all the soils having a surface layer of the same texture belong to one soil type. Portsmouth loam and Portsmouth sandy loam are two soil types in the Portsmouth series. The

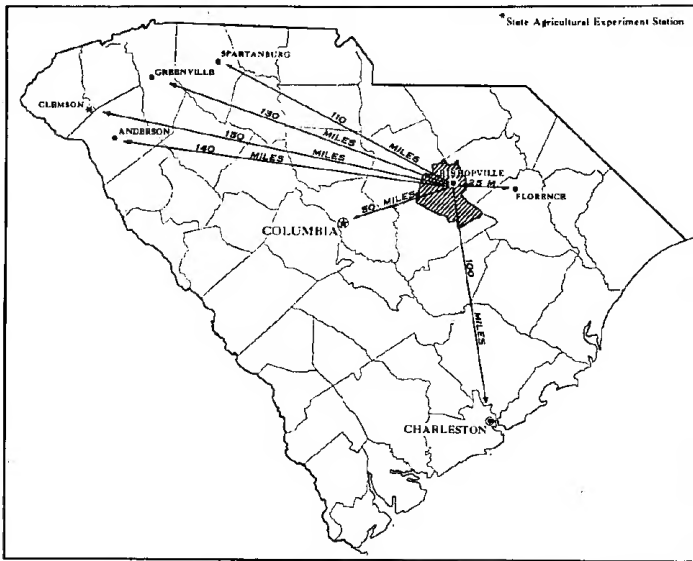


Figure 1.—Location of Lee County in South Carolina.

area of 409 square miles, or 261,760 acres. It is bounded on the north by Kershaw County; on the west, by Kershaw and Sumter Counties; on the south, by Sumter County; and on the east, by Darlington and Florence Counties. The Lynches River forms most of the boundary between Lee County and Darlington and Florence Counties. Bishopville, which had a population of 3,563 in 1960, is the county seat. The population of the county in 1960 was 21,832, about 6 percent less than the population in 1950.

Most of Lee County is a nearly level to gently sloping plain, but the northern and western parts are rolling and hilly. As one goes north, the elevation increases in a gradual upward sweep until the hills are reached. The Sand Hills in the north are cut by V-shaped valleys and are well drained. Below the Sand Hills are gently slop-

difference in the texture of their surface layer is apparent from their names.

Some soil types vary so much in slope, degree of erosion, number and size of stones, or some other feature affecting their use, that practical suggestions about their management could not be made if they were shown on the soil map as one unit. Such soil types are divided into soil phases. The name of a soil phase indicates a feature that affects management. For example, Norfolk loamy sand, 2 to 6 percent slopes, is one of several phases of Norfolk loamy sand, a soil type that has a slope range of 0 to 10 percent.

After a fairly detailed guide for classifying and naming the soils had been worked out, the soil scientists drew soil boundaries on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that greatly help in drawing boundaries accurately. The soil map in the back of this report was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning management of farms and fields, a mapping unit is nearly equivalent to a soil type or a phase of a soil type. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a recognized soil type or soil phase.

In preparing some detailed maps, the soil scientist has a problem of delineating areas where different kinds of soils are so intricately mixed or occur in such small individual tracts that it is not practical to show them separately on the map. Therefore, he shows this mixture of soils as one mapping unit and calls it a soil complex. Ordinarily, a soil complex is named for the major soil series in it. Also, in most mapping, there are areas to be shown that are so rocky, so shallow, or so frequently worked by wind and water that they cannot be called soils. These areas are shown on the soil map, but they are given descriptive names, such as Gullied land or Borrow pits, and are called land types rather than soils.

Only part of the soil survey was done when the soil scientist had named and described the soil series and mapping units and had shown the location of the mapping units on the soil map. He still had to present the mass of detailed information in different ways for different groups of users, among them farmers, managers of woodlands and rangelands, and engineers. To do this efficiently, he had to consult with persons in other fields of work and with them prepare groupings that would be of practical value to the different users. Such groupings are the capability classes, subclasses, and units, designed primarily for those interested in producing the short-lived crops and tame pasture; range sites, for those using large tracts of native grass; woodland suitability groups, for those who manage wooded tracts; and the classifications used by engineers who build highways or structures to conserve soil and water.

General Soil Map

After studying the soils in a locality and the way they are arranged, it is possible to make a general soil map that shows several main patterns of soils, called soil associa-

tions. Such a map is the colored general soil map in the back of this report. Each association, as a rule, contains a few major soils and several minor soils, in a pattern that is characteristic although not strictly uniform.

The soils within any one association are likely to differ greatly among themselves in some properties: for example, slope, depth, stoniness, or natural drainage. Thus, the general soil map shows, not the kind of soil at any particular place, but patterns in each of which there are several different kinds of soil.

Each soil association is named for the major soil series in it, but, as already noted, soils of other series may also be present. The major soils of one soil association may also be present in other associations but in different patterns.

The general soil map showing patterns of soils is useful to people who want a general idea of the soils, who want to compare different parts of a county, or who want to know the possible location of good-sized areas suitable for a certain kind of farming or other land use.

The nine soil associations in Lee County shown on the general soil map in the back of this report are described in the paragraphs that follow.

1. Faceville-Marlboro-Grady association

Nearly level to gently sloping, mostly well-drained, red and yellow soils on broad ridges

This soil association is characterized by broad, nearly level to gently sloping upland ridges that generally are broken only by small drainageways and oval-shaped depressions. It constitutes about 12 percent of the county and occurs in two general areas, one near Woodrow and the other west of Bishopville, in the section locally called the "DuRant Opening." These areas lie between the hilly western part of the county and the more nearly level section to the east and south. One or two well-defined streams begin in these areas, and a few streams that originate elsewhere cross them.

Faceville and Marlboro soils are the most extensive soils and together make up about two-thirds of the association. Faceville soils occur on the second highest ridges. They are between Magnolia soils, which are on the highest ridges and occupy only a small part of this association, and Marlboro soils, which occur at generally lower elevations and are nearly level (fig. 2). Grady soils occupy about a fifth of the acreage and occur in the oval-shaped depressions that are known locally as Carolina bays.

Faceville soils, Marlboro soils, and Magnolia soils are all well drained. Faceville soils have a yellowish-red, friable to slightly sticky subsoil and are redder than Marlboro soils, which have a brownish-yellow to yellowish-brown, friable subsoil. Magnolia soils are redder than Faceville soils. Grady soils are poorly drained, have a gray, clayey subsoil, and occur in depressions that are difficult to drain. There is also a small acreage of Local alluvial land, which occurs at the base of slopes and along drainageways and is moderately well drained to poorly drained.

Except for the flood plains of the small streams and the scattered Carolina bays, almost all the acreage in this soil association is cultivated. Over 70 percent of the acreage is class I and II land; that is, land that has few limitations in use or requires only easily applied practices to prevent deterioration. The farms are large and almost

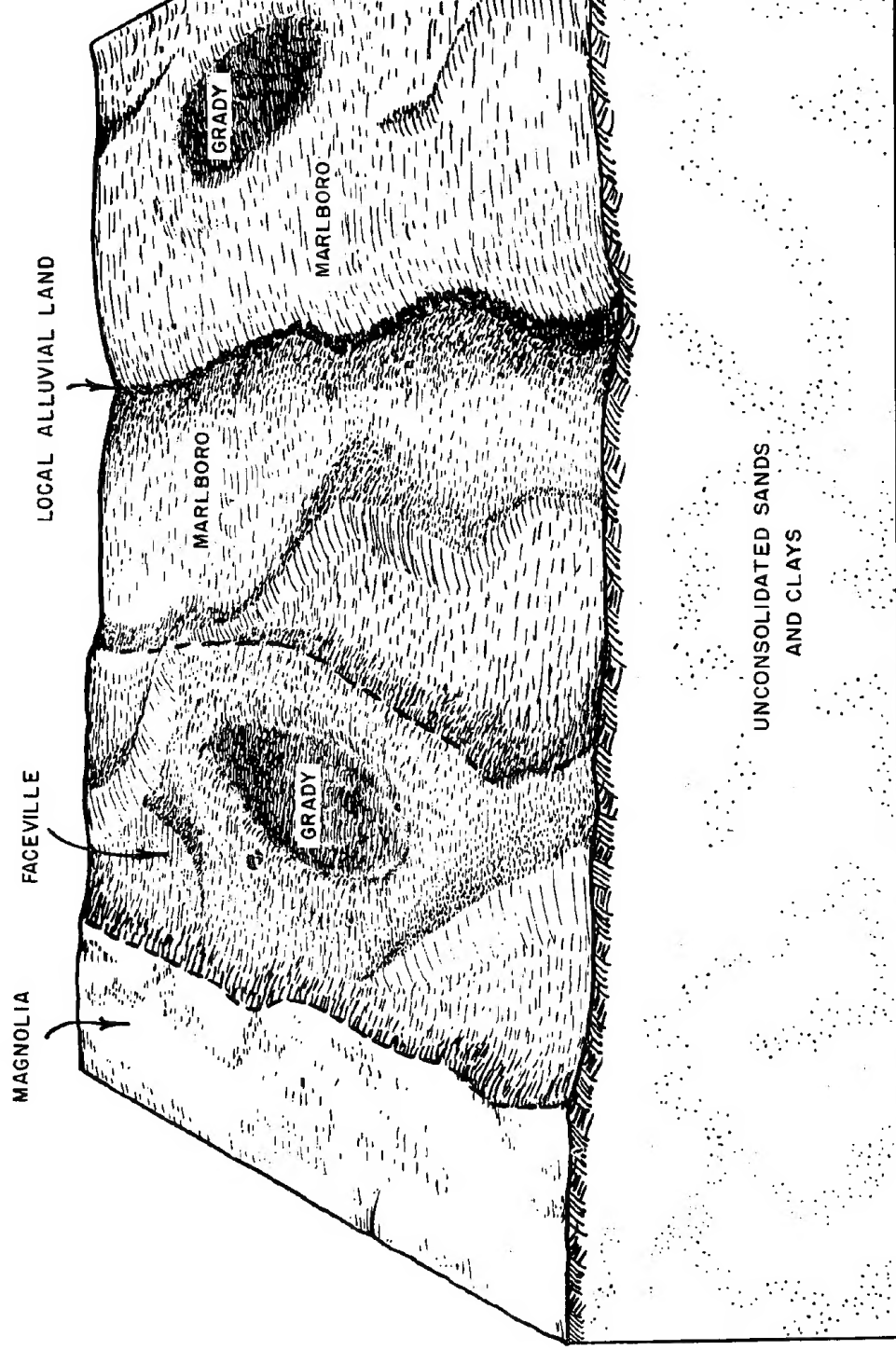


Figure 2.—Major soils in soil association 1 and their general location on the landscape.

entirely mechanized. Full-time general farming is carried on by the owners or by tenant operators.

Except for Grady soils, the soils in this association are productive of a wide range of crops. Cotton, corn, and soybeans are the principal crops, and the only significant acreage of peanuts in the county is in this association.

2. *Norfolk-Dunbar-Coxville association*

Nearly level to gently sloping, well-drained to poorly drained soils

This association is characterized by large cultivated fields of nearly level to gently sloping, well-drained soils; by many small, scattered areas of wet soils; and by a narrow strip of slopes parallel to the flood plains of streams. It is mostly in the southern and eastern parts of the county and constitutes about 26 percent of the total acreage.

The well-drained Norfolk soils occupy the highest ridges adjoining the slopes that parallel the streams (fig. 3). They have a gray surface layer and a yellowish-brown, friable subsoil. Back from these ridges and at lower elevations are the somewhat poorly drained, gray Dunbar soils. The poorly drained, dark-gray Coxville soils occupy the broad depressed areas or basins still farther from the streams. They also occur in some of the oval-shaped depressions in the higher uplands.

Smaller acreages of the well-drained Marlboro soils occur with Norfolk soils on the broad upland ridges. In some places, both soils also extend down the slopes to the edges of the stream flood plains. Marlboro soils have a thinner surface layer than Norfolk soils and a finer textured subsoil. At the same general elevation as Dunbar soils are smaller areas of Lynchburg soils, which are also somewhat poorly drained. Lynchburg soils are coarser textured than Dunbar soils. Portsmouth, Rains, and Plummer soils also occur in this association, but their total acreage is small.

This is an area of intensive farming, and about 65 percent of the acreage is cropped. Almost all the well-drained soils and a large part of the somewhat poorly drained and poorly drained soils are cultivated. Open ditches and tile drains are used to drain these latter soils.

The farms are large and of the general type. They are operated on a combination share-crop and day-labor basis. Many of the owners live on their farms, but some live in nearby towns. Cotton, corn, soybeans, small grains, and tobacco are the principal crops. About half the tobacco acreage in the county is in this general area.

Except for the flood plains of streams, which are in swamp hardwoods, the acreage not cultivated is used to grow pine trees.

3. *Norfolk-Ruston-Grady association*

Nearly level to gently sloping, generally well-drained soils, and poorly drained, dark-colored soils in depressions

This association is characterized by broad, nearly level to gently sloping ridgetops on which there are deep, well-drained, friable soils; by many oval-shaped depressions; and by a narrow strip of side slopes along the streams. It constitutes about 12 percent of the county and occurs

mostly in the northern part. There are two general areas, one in the northwest and one east of the Lynches River in the northeast.

Ruston, Norfolk, and Orangeburg soils, which are the most extensive, occupy the gently sloping ridgetops. These soils have a gray to grayish-brown surface layer. Orangeburg soils have a red or dark-red subsoil; Ruston soils have a brown to yellowish-red subsoil; and Norfolk soils have a yellow to yellowish-brown subsoil. These soils differ from the soils in association 1 chiefly in having a friable, less clayey subsoil. Grady soils, which have a gray, tight subsoil indicating their poor drainage, occur in the oval-shaped depressions, or Carolina bays.

Gilead soils and Vacluse soils are on the slopes that border the streams. They have a compact or slightly cemented subsoil and are not so deep as Norfolk, Ruston, and Orangeburg soils. The Gilead subsoil is yellow to brownish yellow, and the Vacluse subsoil is yellowish red to red.

About four-fifths of the acreage is cultivated. General farming is carried on, and cotton, corn, soybeans, and small grains are the common crops. Tobacco is grown on a small acreage. About a fifth of the acreage is not cropped. This includes the flood plains of the streams, which are covered by forest, and some of the wetter Carolina bays. There are no drainage outlets in some of these bays, and water stands in them much of the time. Water-tolerant grasses grow here.

4. *Izagora-Wahee-Myatt association*

Moderately well-drained to poorly drained soils on stream terraces

This association occurs in a narrow, discontinuous band on the western side of the Lynches River and constitutes only 3 percent of the county. It consists chiefly of the moderately well drained to somewhat poorly drained soils in the Izagora and Wahee series, which occur at intermediate elevations on the river terraces (fig. 4). Izagora soils have a dark-gray surface layer and a mottled, yellow to yellowish-brown subsoil. Wahee soils have a gray to pale-brown surface layer and a yellowish-brown subsoil. Wahee soils are finer textured than Izagora soils and have a thinner surface layer.

The gray, poorly drained Myatt soils occur at lower elevations on the river terrace, away from the river, along with the poorly drained Leaf soils, which are finer textured than Myatt soils. At even lower elevations are Okenee soils, which have a thick, black, organic surface layer and are very poorly drained.

The well-drained Kalmia and Cahaba soils occupy the highest part of the terrace and are next to the river flood plain. Small areas of the excessively drained terrace phase of Lakeland sand also occur at these higher elevations. These soils are nearly level to gently sloping.

General farming is typical of this association, although there is one dairy farm. Cotton, corn, soybeans, and small grains are the principal crops, and there is also a small acreage of tobacco. Drainage is a problem in places because of low elevation and a lack of major outlets. About 40 percent of the acreage is cropped, and the rest is in cutover pine and hardwood forest.

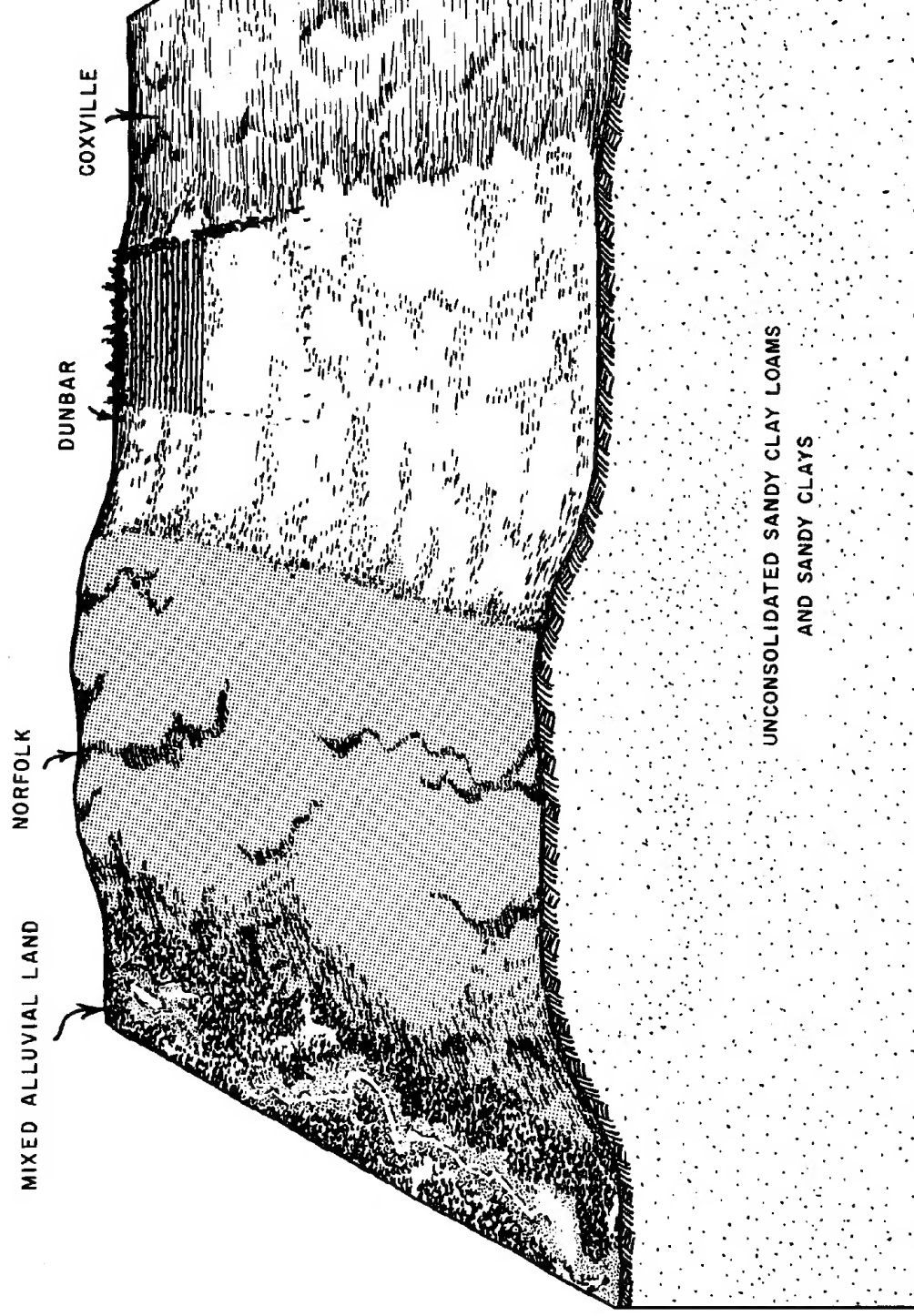


Figure 3.—Major soils in association 2 and their general location on the landscape.

5. *Lynchburg-Portsmouth-Rutlege association*

Nearly level, somewhat poorly drained to very poorly drained soils on lowlands

This association consists chiefly of the large oval-shaped depressions, called Carolina bays, east of the Lynches River, and the surrounding nearly level, wet lowlands. The total acreage is small.

The very poorly drained Portsmouth and Rutlege soils occur in the Carolina bays. They have a thick surface layer of black loam or sandy loam that is high in organic-matter content. The subsoil of Portsmouth soils is sandy clay loam to clay, and that of Rutlege soils is loose loamy sand. Around the edges of the bays are the nearly level, somewhat poorly drained, gray Lynchburg soils. At slightly higher elevations around the bays are small areas of Lakeland soils, which are excessively drained and have a gray sand or loamy sand surface layer and a yellowish sand subsoil.

Very little of the acreage is cultivated. Drainage is not well established, chiefly because of the lack of suitable outlets, and yields of most crops are low. The principal crops are corn, cotton, watermelons, and soybeans. The higher elevations not cultivated are covered by a forest of loblolly pine and longleaf pine. The lower elevations are covered by water oak, blackgum, sweetgum, and cypress.

6. *Goldsboro-Lynchburg-Coxville association*

Nearly level, moderately well drained to poorly drained soils

This association is characterized by large, level or nearly level areas that have no major drainage outlets. In seasons of high rainfall, most of the cultivated land is wet a good part of the time. This association is in the extreme southeastern part of the county, between the Lynches River and the Black River, and constitutes about 15 percent of the county.

Throughout most of this association the moderately well drained Goldsboro soils occur at the highest elevations, although in a few places the well-drained Norfolk soils occur at these levels. Goldsboro soils have a dark-gray surface layer and a yellowish-brown, sandy clay loam subsoil that is mottled in the lower part. Although less well drained than Norfolk soils, they are deep and friable and are productive under good management.

Lynchburg soils occur at slightly lower elevations. They are somewhat poorly drained, and their dark-gray surface layer is underlain by a yellowish-brown sandy clay loam subsoil that is mottled throughout. The poorly drained Coxville soils and the black, very poorly drained Portsmouth soils occur at the lowest elevations. Coxville soils are dark gray and have a finer textured subsoil than either Goldsboro or Lynchburg soils.

The soils of this association are productive if they are drained and adequately fertilized. About half the acreage is cultivated. The lack of major drainage outlets prohibits effective drainage of most of the poorly drained soils, but a large part of the acreage of Goldsboro and Norfolk soils and much of that of Lynchburg soils is drained and cultivated. About half the tobacco acreage in the county is in this association, chiefly on Goldsboro and Lynchburg soils. Very little of the acreage of Coxville and Portsmouth soils is cultivated.

The acreage not cropped is in woodland. Longleaf pine and loblolly pine are the principal trees on Goldsboro and Lynchburg soils and on some areas of Coxville soils. Blackgum, sweetgum, and cypress are dominant on the larger areas of Coxville soils and on Portsmouth soils.

7. *Wehadkee-Swamp association*

Nearly level, very poorly drained soils on flood plains

This association consists of the flood plains along the Lynches River, the Black River, Scape Ore Swamp, and some of their larger tributaries. It constitutes about 3 percent of the county. None of the acreage is cropped.

Wehadkee silt loam is on the flood plain of the Lynches River. It is dark grayish brown, very poorly drained, and subject to frequent flooding. The remainder of the association consists of the land type, Swamp, which is under water most of the time. This land type consists mostly of an organic layer of varying thickness over mixed alluvium of Coastal Plain sediments.

Blackgum, tupelo-gum, cypress, and other swamp hardwoods are the dominant forest species in this association. A few oaks and pines grow on the highest areas of Wehadkee silt loam.

8. *Lakeland-Vaocluse-Gilead association*

Nearly level to steep, droughty soils of the Sand Hills

Gently sloping ridgetops, steep side slopes, gentle base slopes, and narrow draws characterize the landscape in this association. Numerous small drains and several streams start here. This association constitutes about 12 percent of the county. It is in the hilly north-central part, or the Sand Hills, and extends south in fairly narrow bands along the eastern side of Scape Ore Swamp and along the eastern side of the Lynches River.

Lakeland soils occur on the higher ridgetops and, in places, extend down the side slopes (fig. 5). They are deep, excessively drained, and coarse textured. They have a thick surface layer of grayish sand and a subsoil of pale-yellow to yellowish-brown sand. Vaocluse soils are the main soils on the steep side slopes. They are shallow to moderately deep, and their subsoil is brownish red and very firm and compact. Gilead soils are mainly on the gentle base slopes. They also occur on some of the low ridgetops below Lakeland and Vaocluse soils, where they extend part of the way down the side slopes. Their subsoil is compact, but less so than that of Vaocluse soils, and it is brownish yellow rather than red.

Plummer soils and Rutlege soils occur at the head of drains and in the smaller drainageways. Their combined acreage is very small. They are poorly drained to very poorly drained, gray, and sandy. Rutlege soils have a thick, dark-colored, organic surface layer, but Plummer soils are low in organic-matter content. Mixed alluvial land also occurs in some of the small drainageways.

East of the Lynches River, this association contains a large acreage of Lakewood sand. To a depth of about 20 inches, this soil is light gray and highly leached. It has a discontinuous hardpan at a depth of 22 to 30 inches. Scrub oak and lichens form the principal cover on this soil.

The soils in this association are low in natural fertility and are droughty. The steeper slopes are eroded readily

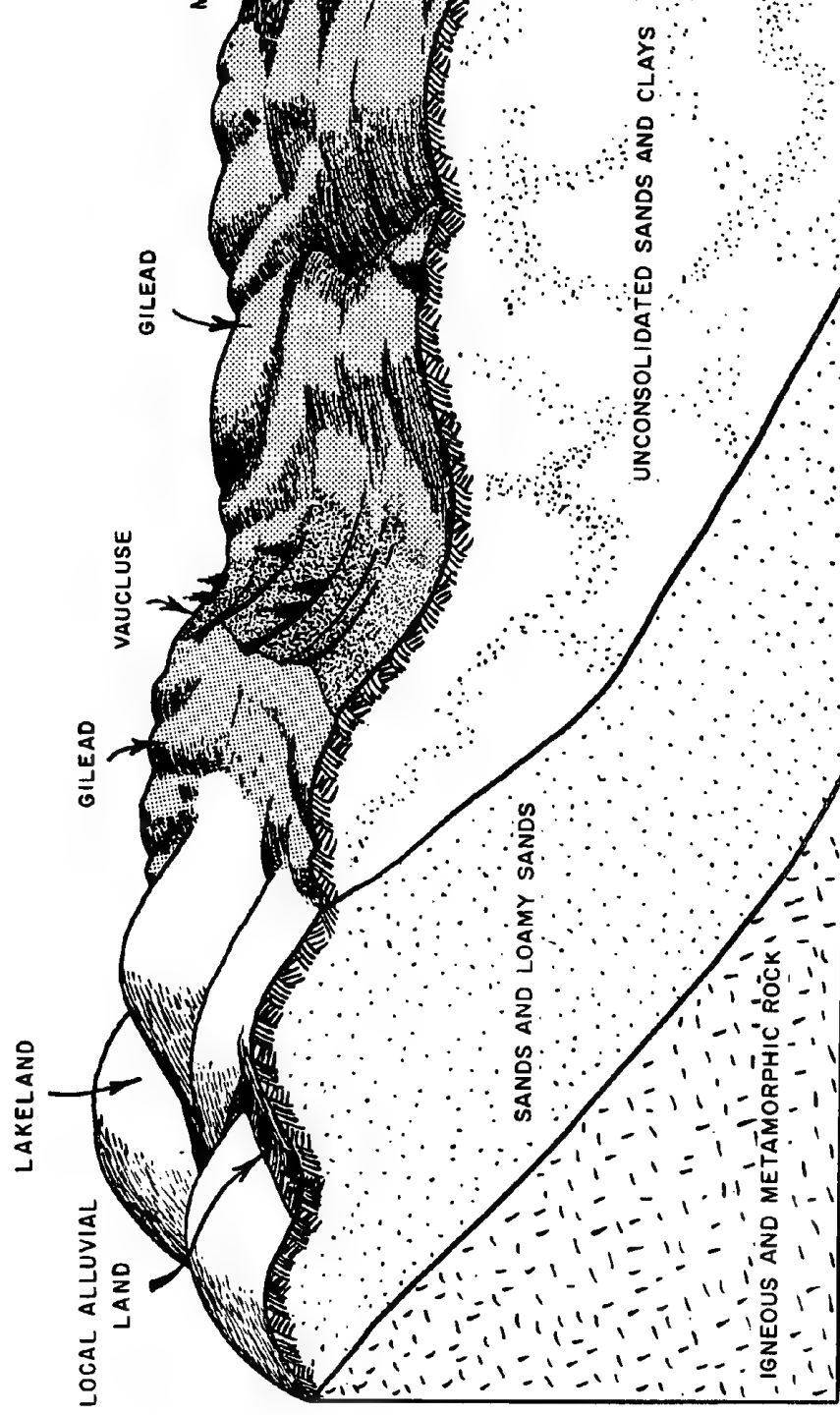


Figure 5.—Major soils in soil association 8 and their general location on the landscape.

by runoff, and the larger cultivated areas are subject to wind erosion if they do not have a good crop cover.

About 30 percent of the acreage is cropped. General farming is carried out on the small to medium-sized farms. Most of the farms are operated by the owner and his family. In general, crop yields are low. The acreage not cropped is in second-growth longleaf pine, loblolly pine, scrub oak, or hardwoods.

9. *Gilead-Vaocluse association*

Very gently sloping to steep, moderately well drained soils that have a compact, slowly permeable subsoil

A pattern of very gently sloping ridgetops, steep side slopes, and gently sloping base slopes that extend to the small drainageways characterizes this association. The association is mostly in the western part of the county and constitutes about 15 percent of the acreage.

Gilead soils, which are the most extensive, occupy the ridgetops and base slopes. They have a surface layer of gray to grayish-brown loamy sand and a compact, brittle, brownish-yellow subsoil. In places the upper part of the subsoil is friable.

Vaocluse soils are dominant on the steep sideslopes. They are shallow to moderately deep and have a yellowish-red to reddish-brown, compact, brittle subsoil. In places the subsoil is slightly cemented. Windthrow is common in stands of pine on Vaocluse soils because of the shallowness to the compact or cemented lower layer.

The excessively drained Lakeland soils occur in small areas on the ridgetops along with Gilead soils. Rutlege, Plummer, and Rains soils occur in small areas around the drainageways. These soils are poorly drained to very poorly drained.

Farming in this association is confined to the ridgetops and the gentle base slopes. The soils are low in natural fertility, and much of the acreage is moderately or severely eroded. There are a few large farms, but most of the farms are small or medium sized. Many are operated by the owners. About 30 percent of the acreage is cultivated, and the rest is mostly in second-growth longleaf pine and loblolly pine. Hardwoods grow on the wet areas.

*Use and Management of the Soils*¹

This section is a general guide to the management of the soils in Lee County. It does not suggest specific management for individual soils. Detailed information about managing the soils can be obtained from the local staffs of the Extension Service and the Soil Conservation Service or from the Agricultural Experiment Station at Clemson.

The first of the six main divisions of this section describes the system of classifying soils according to their suitability for crops and other agricultural uses.

In the second part, the soils mapped in Lee County are placed in capability units. Most of the units consist of several soils, but some are made up of only one soil. In the description of each unit the soils are listed, the fea-

tures they have in common are described, suitable crops and other uses are given, and the principal limitations and management needs are indicated.

In the third part are two tables. One shows the estimated average acre yields of selected crops under two levels of management; the other rates the soils best suited to cultivation according to their suitability for selected crops.

The fourth part of this section discusses woodland management and the relative suitability of the soils for the production of trees.

The fifth part gives suggestions for the improvement of wildlife habitats. For this discussion, the soils are considered as they occur in the soil associations described in the section "General Soil Map."

The sixth main part of this section is concerned with the properties that affect the use of the soils in road construction and in agricultural engineering.

Capability Groups of Soils

The capability classification is a grouping that shows, in a general way, how suitable soils are for most kinds of farming. It is a practical grouping based on limitations of the soils, the risk of damage when they are used, and the way they respond to treatment.

In this system all the kinds of soils are grouped at three levels: the capability class, the subclass, and the unit. The eight capability classes in the broadest grouping are designated by Roman numerals I through VIII. In class I are the soils that have few limitations, the widest range of use, and the least risk of damage when they are used. The soils in the other classes have progressively greater natural limitations. In class VIII are soils and landforms so rough, shallow, or otherwise limited that they do not produce worthwhile yields of crops, forage, or wood products.

The subclasses indicate major kinds of limitations within the classes. Within most of the classes there can be up to four subclasses. The subclass is indicated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* means that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the country, indicates that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few or no limitations. Class V can contain, at the most, only subclasses *w*, *s*, and *c*, because the soils in it have little or no erosion hazard but have other limitations that limit their use largely to pasture, range, woodland, or wildlife.

Within the subclasses are the capability units, groups of soils enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability units are convenient groupings for many statements about management of soils. Cap-

¹ L. D. EAGLES, management agronomist, Soil Conservation Service, assisted in the preparation of this section.

ability units are generally identified by numbers assigned locally, for example, IIe-1 or IIIe-2.

Soils are classified in capability classes, subclasses, and units in accordance with the degree and kind of their permanent limitations; but without consideration of major and generally expensive land-forming that would change the slope, depth, or other characteristics of the soil; and without consideration of possible but unlikely major reclamation projects.

The eight classes in the capability system, and the subclasses and units in Lee County, are described in the list that follows. The soils were assigned to capability units according to a system used in several Southern States. Since not all the capability units in this system are represented in Lee County, the numbering of units is not everywhere consecutive. For example, there are no soils of capability unit IIIe-3 or IIIw-1 in Lee County. Therefore, these capability units and some others are not discussed in this report.

Class I. Soils that have few limitations that restrict their use. (No subclasses)

Capability unit I-1.—Deep, well-drained, nearly level soils that have a sandy surface layer, 12 to 18 inches thick, and a friable subsoil.

Capability unit I-2.—Deep, well-drained, nearly level soils that have a sandy surface layer, 6 to 12 inches thick, and a sticky sandy clay subsoil.

Class II. Soils that have some limitations that reduce the choice of plants or require moderate conservation practices.

Subclass IIe. Soils subject to moderate erosion if they are not protected.

Capability unit IIe-1.—Deep, well-drained, gently sloping soils that have a friable subsoil.

Capability unit IIe-2.—Deep, well-drained, gently sloping soils that have a sticky sandy clay subsoil.

Capability unit IIe-4.—Moderately deep well drained and moderately well drained, gently sloping soils that have a compact or weakly cemented subsoil.

Subclass IIw. Soils that have moderate limitations because of excess water.

Capability unit IIw-1.—Deep, slightly wet, nearly level alluvial soils in draws and depressions.

Capability unit IIw-2.—Deep, somewhat poorly drained to moderately well drained, nearly level soils.

Subclass IIs. Soils that have moderate limitations of moisture capacity and fertility.

Capability unit IIs-1.—Nearly level to gently sloping soils that have a rapidly permeable sandy surface layer, 18 to 30 inches thick.

Capability unit IIs-2.—Nearly level, moderately well drained to well drained soils that have a rapidly permeable surface layer, 9 to 18 inches thick, and a compact, slowly permeable subsoil.

Class III. Soils that have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Subclass IIIe.—Soils subject to erosion if they are cultivated and not protected.

Capability unit IIIe-1.—Deep, sloping soils that have a friable subsoil.

Capability unit IIIe-2.—Deep, sloping soils that have a sticky sandy clay subsoil.

Capability unit IIIe-4.—Shallow to moderately deep, sloping soils that have a compact or weakly cemented subsoil.

Capability unit IIIe-5.—Deep, slightly droughty, sloping soils that have a sandy surface layer, 18 to 30 inches thick, and a friable subsoil.

Subclass IIIw. Soils that have severe limitations because of excess water.

Capability unit IIIw-2.—Deep, nearly level, poorly drained soils that have a firm sandy clay loam to sandy clay subsoil.

Capability unit IIIw-3.—Moderately deep, nearly level, moderately well drained to somewhat poorly drained soils that have a friable surface layer, 6 to 12 inches thick, and a firm sandy clay or clay subsoil.

Capability unit IIIw-4.—Deep, nearly level, very poorly drained soils that have a black loam or sandy loam surface layer and a sandy clay loam or sandy clay subsoil.

Subclass IIIs. Soils that have severe limitations of moisture capacity and fertility.

Capability unit IIIs-1.—Deep, nearly level to gently sloping, excessively drained soils that have a sandy surface layer, 30 to 36 inches thick, and a friable subsoil.

Capability unit IIIs-4.—Moderately deep, gently sloping, moderately well drained soils that have a loamy sand surface layer, 18 to 30 inches thick, and a compact or weakly cemented subsoil.

Class IV. Soils that have very severe limitations that restrict the choice of plants, require very careful management, or both.

Subclass IVe. Soils subject to very severe erosion if they are cultivated and not protected.

Capability unit IVe-4.—Shallow to moderately deep, sloping to strongly sloping, well-drained soils that have a compact or weakly cemented subsoil.

Subclass IVw. Soils that have very severe limitations for cultivation because of excess water.

Capability unit IVw-2.—Nearly level, poorly drained soils that are on stream terraces and have a firm to very firm clayey subsoil.

Capability unit IVw-3.—Poorly drained to very poorly drained soils at the head of drainage-ways; the water table is high.

Subclass IVs. Soils that have very severe limitations of low moisture capacity.

Capability unit IVs-1.—Deep, sandy, gently sloping to sloping soils through which water moves rapidly.

Class V. Soils that are not likely to erode but have other limitations, impractical to remove without major reclamation, that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass Vw. Soils too wet for cultivation; drainage or protection not feasible.

Capability unit Vw-2.—Deep, nearly level, poorly drained to very poorly drained, unproductive soils.

Class VI. Soils that have severe limitations that make them generally unsuitable for cultivation and that limit their use largely to pasture or range, woodland, or wildlife food and cover.

Subclass VIe. Soils severely limited, chiefly by risk of erosion if protective cover is not maintained.

Capability unit VIe-2.—Sloping to strongly sloping, acid soils that have a compact, slowly permeable subsoil.

Subclass VIw. Soils severely limited by excess water and generally unsuitable for cultivation.

Capability unit VIw-1.—Nearly level, poorly drained alluvial soil that is subject to frequent overflow.

Class VII. Soils that have very severe limitations that make them unsuitable for cultivation without major reclamation and that restrict their use largely to grazing, woodland, or wildlife.

Subclass VIIw. Soils very severely limited by excess water.

Capability unit VIIw-1.—Swamps along the flood plains of streams.

Subclass VIIs. Soils very severely limited by moisture capacity, stones, or other soil features.

Capability unit VIIs-1.—Nearly level to sloping, excessively drained, sandy soils.

Capability unit VIIs-2.—Sloping to steep, severely eroded, gullied land and borrow pits.

Class VIII. Soils and landforms that have limitations that preclude their use, without major reclamation, for commercial production of plants; and that restrict their use to recreation, wildlife, water supply, or esthetic purposes. There are no class VIII soils in Lee County.

Management by Capability Units

Soils that are in the same capability unit have about the same limitations and similar risk of damage. The soils in any one unit, therefore, need about the same kind of management. The capability units are described in the following pages. The soils in each unit are listed, and suitable crops and management for all the soils in the unit are suggested.

Capability unit I-1

The soils in this capability unit are among the best in the county for cultivated crops. They are nearly level, deep, well-drained, grayish-brown to brown loamy sands, loamy fine sands, and sandy loams that have a yellow to red, friable, sandy clay loam subsoil. They occur on uplands throughout the county and on stream terraces. The soils are—

Cahaba sandy loam.

Kalmia loamy sand.

Norfolk loamy fine sand, 0 to 2 percent slopes.

Norfolk loamy sand, 0 to 2 percent slopes.

Orangeburg loamy sand, 0 to 2 percent slopes.

Ruston loamy sand, 0 to 2 percent slopes.

These soils have good structure and are easily tilled. They are moderately permeable and have a low to moderate available moisture capacity. They are medium acid to strongly acid. They have a low to moderate content of organic matter and a low to moderate natural supply of plant nutrients.

Under good management, these soils are very productive. They are well suited to all the cultivated crops commonly grown in the county, and also to Coastal bermudagrass, bahiagrass, crimson clover, and sericea lespedeza for hay and pasture.

Row crops can be grown on these soils each year. To maintain good yields, however, it is necessary to apply lime and fertilizer and to maintain the supply of organic matter. Water erosion is not a hazard. In large fields, strips of a close-growing crop at right angles to the prevailing wind will help to control wind erosion. These soils are well suited to irrigation.

Capability unit I-2

The soils in this capability unit are also among the best in the county for growing crops. They are deep, well drained, and nearly level. Their loamy sand surface layer, which is 6 to 12 inches thick, is underlain by a yellowish-brown to red, sticky, sandy clay subsoil. They are moderately permeable and have a moderate infiltration rate and a moderate available moisture capacity. They are acid. Because of their clayey subsoil, added plant nutrients are not leached out so rapidly as from the sandier soils. The soils are—

Faceville loamy sand, 0 to 2 percent slopes.

Magnolia loamy sand, 0 to 2 percent slopes.

Marlboro loamy sand, 0 to 2 percent slopes.

These productive soils are well suited to cotton, corn, tobacco, soybeans, small grains, peanuts, truck crops, or most of the crops grown locally. Bahiagrass, Coastal bermudagrass, annual lespedeza, crimson clover, and sericea lespedeza are suitable hay and pasture plants. Yields of forage are good.

Row crops can be grown on these soils each year. For high yields, fertilizer and lime are needed, and the organic-matter content must be maintained. There is little danger of water erosion, but wind erosion is a hazard in large open fields. Strips of a close-growing crop at right angles to the prevailing wind will help to control soil blowing. Most of the soils in this unit occur in large areas that are well suited to mechanized farming.

Because of their moderate infiltration rate, moderate permeability, and moderate available moisture capacity, these soils are well suited to sprinkler irrigation.

Capability unit IIe-1

This capability unit consists of gently sloping, deep, well-drained soils on uplands throughout the county. They have a 12- to 18-inch surface layer of grayish-brown to brown, very friable loamy sand and a subsoil of red to yellow, friable sandy clay loam. The soils are—

Norfolk loamy sand, 2 to 6 percent slopes.

Norfolk loamy sand, 2 to 6 percent slopes, eroded.

Orangeburg loamy sand, 2 to 6 percent slopes.

Orangeburg loamy sand, 2 to 6 percent slopes, eroded.

Ruston loamy sand, 2 to 6 percent slopes.

Ruston loamy sand, 2 to 6 percent slopes, eroded.

These soils have good structure and are easily kept in good tilth. They have a moderate content of organic matter and a low to moderate natural supply of plant nutrients. They are moderately permeable and have a low to moderate available moisture capacity. They are acid.

The soils in this unit are well suited to cotton, corn, tobacco, small grains, and truck crops. They are also well suited to bahiagrass, Coastal bermudagrass, crimson clover, and sericea lespedeza for hay and pasture.

Water erosion is a moderate hazard in cultivated fields. Using a rotation that includes a close-growing crop at least half the time, plus some supplemental measures, will help to control runoff. A suitable rotation consists of a small grain followed by soybeans for 1 year, and a row crop, such as cotton or corn, for 1 year. Contour cultivation, terraces in some places, and stripcropping on the longer slopes generally are effective supplemental measures. Strips of a close-growing crop planted at right angles to the prevailing wind will help to control soil blowing in large open fields. Crops respond to heavy applications of fertilizer and to moderate applications of lime. These soils are suited to sprinkler irrigation, but water must be applied carefully to prevent erosion from excess runoff.

Capability unit IIe-2

These soils are deep, well drained, and gently sloping. The surface layer is grayish-brown, very friable loamy sand that is 6 to 12 inches thick. The subsoil is chiefly yellowish-brown to red, firm, sticky sandy clay. These soils have a low to moderate content of organic matter and a moderate natural supply of plant nutrients. They are easily tilled. They are moderately permeable and have a moderate available moisture capacity. All these soils are acid. The soils are—

- Faceville loamy sand, 2 to 6 percent slopes.
- Faceville loamy sand, 2 to 6 percent slopes, eroded.
- Magnolia loamy sand, 2 to 6 percent slopes, eroded.
- Marlboro loamy sand, 2 to 6 percent slopes.
- Marlboro loamy sand, 2 to 6 percent slopes, eroded.

Most of the acreage is cropped. These soils are not so well suited to tobacco as the soils in capability unit IIe-1, but they are well suited to the other crops commonly grown. Crops show about the same response to lime and fertilizer as those grown on the soils in capability unit IIe-1. Because of their finer textured subsoil, however, these soils have a slightly greater capacity to retain plant nutrients and water. Water erosion is a moderate hazard that can be controlled by the measures suggested for the soils in capability unit IIe-1. The soils are well suited to sprinkler irrigation, but care must be used in applying water to prevent erosion from excess runoff.

Capability unit IIe-4

This unit consists of gently sloping, well drained and moderately well drained soils on uplands. They have a very firm, compact or weakly cemented, slowly permeable subsoil of sandy clay loam at a depth of 6 to 18 inches. The surface layer is grayish-brown to brown, very friable loamy sand that is moderately permeable. The soils are—

- Gilead loamy sand, 2 to 6 percent slopes.
- Vaughan loamy sand, 2 to 6 percent slopes.

Because the compact layer is so close to the surface, these soils have a low available moisture capacity and a fairly shallow root zone. They have a low content of organic matter and a low natural supply of plant nutrients. They are medium acid to strongly acid. They are fairly well suited to oats, rye, cotton, and corn. They are well suited to Coastal bermudagrass, bahiagrass, sericea lespedeza, and crimson clover for hay and pasture.

Water erosion is a slightly greater hazard on these soils than on the soils in capability units IIe-1 and IIe-2. A cropping system that includes a close-growing crop at least half the time will help to supply needed organic matter and to control erosion. Suitable rotations are (1) bahiagrass for 2 years or more and row crops for 2 years; (2) oats followed by soybeans for 1 year and a row crop for 1 year. If the second rotation is followed, great care must be used in all field operations, adequate amounts of fertilizer must be applied, and supplementary measures must be used to control erosion. Crops on these soils show less response to fertilizer and lime than those grown on the soils in capability units I-1, I-2, IIe-1, and IIe-2. Contour tillage, stripcropping, terraces, and grassed waterways are needed to control erosion.

Borders and odd corners of fields can be planted to bi-color lespedeza, which provides food and cover for wildlife. Pines grow well on these soils, but because of the cemented subsoil, particularly in Vaughan loamy sand, there is some risk of windthrow. There are some suitable sites for impounded ponds, but each site must be checked carefully to see if the substratum will hold water.

Capability unit IIw-1

This capability unit consists of one mapping unit, Local alluvial land. This land type is deep, nearly level, and somewhat poorly drained to well drained. It occurs mostly in slight depressions but also at the head of drainageways. The areas are 2 to 5 acres in size. The surface layer is gray to brown, very friable loam or loamy sand.

Local alluvial land has a moderate content of organic matter and a moderate to high natural supply of plant nutrients. It is medium acid. It is moderately permeable and has a moderate infiltration rate and a moderate available moisture capacity.

Most of the acreage is cultivated. Because of the availability of water throughout most of the grazing season, however, this land type is especially desirable for pasture. It can be drained well enough to be suitable for truck crops, corn, small grains, and soybeans, but not well enough to be suitable for cotton and tobacco. If drained, seeded, and fertilized, it produces good yields of Coastal bermudagrass, bahiagrass, whiteclover, and annual lespedeza.

A suitable cropping system consists of oats followed by soybeans for 1 year and row crops for 2 years. Some lime is required. Both open ditches and tile can be used to drain this land type. In places terraces or diversion channels are needed to protect the areas against runoff from higher lying land. In other places runoff must be carried in channels that run through the areas.

Capability unit IIw-2

This capability unit consists of nearly level, somewhat poorly drained to moderately well drained soils that have a deep root zone. The surface layer is very dark gray to

grayish-brown sandy loam or loamy sand. The subsoil is yellowish-brown, friable sandy clay loam or sandy clay mottled with gray. These soils are productive, but their wetness is a decided limitation. The soils are—

Dunbar sandy loam.
Goldsboro loamy sand.
Izagora sandy loam.
Lynchburg sandy loam.

These soils are moderately permeable to slowly permeable. They have a moderate to high infiltration rate and a moderate to high available moisture capacity. They are medium acid to strongly acid. They have a moderate content of organic matter and a moderate natural supply of plant nutrients. They are easily worked and can be kept in good tilth without much difficulty.

In their natural state, these soils are suitable for woodland but not for other uses. Much of the acreage is undrained because of the lack of outlets. Under good management, drained areas are suited to a wide variety of crops, including corn, cotton, tobacco, truck crops, small grains, soybeans, dallisgrass, bahiagrass, Coastal bermudagrass, tall fescue, white clover, annual lespedeza, and crimson clover. Good management includes maintenance of the organic-matter content, applications of a complete fertilizer, and, for some crops, light to moderate applications of lime.

If adequately drained and fertilized, these soils are suited to intensive use. Suitable cropping systems are (1) a small grain and annual lespedeza for 1 year and row crops for 2 years; (2) tall fescue or bahiagrass and white-clover for 2 or more years and row crops for 2 or 3 years.

Goldsboro loamy sand requires less drainage than the other soils; generally, only the small, low-lying areas need to be drained. Dunbar, Lynchburg, and Izagora sandy loams can be drained by tile, open ditches, or a combination of the two (fig. 6).

Because of their nearly level surface, their moderate infiltration rate, and their good tilth, these soils are especially well suited to sprinkler irrigation. Generally, water is readily available from excavated ponds.

Capability unit IIs-1

This capability unit consists of deep, well-drained, nearly level to gently sloping soils on uplands and stream



Figure 6.—V-type ditch used to drain soils in capability unit IIs-2.



Figure 7.—Stripcropping to control wind erosion on a field in capability unit IIs-1.

terraces. These soils have a surface layer of grayish-brown to brown, loose loamy sand. This layer is 18 to 30 inches thick. The subsoil is yellow to yellowish-red, friable sandy loam or sandy clay loam. The soils are—

Kalmia loamy sand, thick surface.
Norfolk loamy sand, thick surface, 0 to 2 percent slopes.
Norfolk loamy sand, thick surface, 2 to 6 percent slopes.
Ruston loamy sand, thick surface, 0 to 2 percent slopes.
Ruston loamy sand, thick surface, 2 to 6 percent slopes.

These soils have a low content of organic matter and a low natural supply of plant nutrients. Because of their thick, sandy surface layer, they have only a low to moderate available moisture capacity, are droughty, and lose added plant nutrients and organic matter more rapidly than the well-drained soils that contain more clay. They are medium acid to strongly acid. They are easily tilled.

The soils in this unit are well suited to sweetpotatoes, watermelons, and soybeans. They are fairly well suited to tobacco, cotton, corn, peanuts, and oats. Yields of Coastal bermudagrass, bahiagrass, and sericea lespedeza are fair to good.

If these soils are adequately fertilized and if crop residues are returned, moderately short rotations may be followed. Suitable rotations are (1) a small grain followed by soybeans for 1 year, and a row crop for 1 year; (2) bahiagrass, grown alone or with sericea lespedeza, for 2 or 3 years and row crops for 2 or 3 years. Good management requires the use of a complete fertilizer, lime for many crops, and measures to maintain the supply of organic matter. Generally, contour cultivation is needed to control water erosion. On longer slopes, terraces or stripcropping may be necessary also. Wind erosion is enough of a hazard in large fields to require stripcropping as a protection against blowing (fig. 7).

Capability unit IIs-2

Gilead loamy sand, 0 to 2 percent slopes, is the only soil in this capability unit. It is nearly level and is moderately well drained to well drained. The surface layer is 9 to 18 inches of very friable, light-colored loamy sand. The subsoil is compact at a depth of about 24 to 30 inches. It restricts the growth of roots and the movement of water through the soil.

This soil has a low content of organic matter and a low natural supply of plant nutrients. Its available moisture

capacity is low. It is medium acid to strongly acid.

This soil is fairly well suited to cotton, corn, oats, and watermelons. It is suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for hay and pasture. Good management requires the use of large amounts of fertilizer and the return of all crop residues to the soil. Strips of close-growing crops at a right angle to the prevailing wind help to control wind erosion and wind damage to young row crops.

Capability unit IIIe-1

This capability unit consists of deep, well-drained, sloping soils on the uplands. They have a surface layer of grayish-brown to brown, very friable loamy sand and a subsoil of yellowish-brown to yellowish-red, friable sandy clay loam. The soils are—

- Norfolk loamy sand, 6 to 10 percent slopes.
- Norfolk loamy sand, 6 to 10 percent slopes, eroded.
- Orangeburg loamy sand, 6 to 10 percent slopes, eroded.
- Ruston loamy sand, 6 to 10 percent slopes.
- Ruston loamy sand, 6 to 10 percent slopes, eroded.

The soils in this unit have a low to moderate content of organic matter and a low to moderate natural supply of plant nutrients. They are moderately permeable and have a moderate rate of infiltration and a moderate available moisture capacity. They are acid. They have good structure, are easily tilled, and can be grazed during wet periods without much damage from trampling. In the galled spots on the eroded soils, the organic-matter content is low and tilth is less favorable than in the less eroded soils.

These soils are fairly well suited to the crops commonly grown in the county. Because of the slope and the consequent erosion hazard, however, row crops can be grown less frequently than on the gently sloping soils of the same series. Suitable hay and pasture plants are Coastal bermudagrass, bahiagrass, sericea lespedeza, and crimson clover.

Suitable rotations for these soils are (1) bahiagrass for 3 years and row crops for 2 years; (2) oats followed by soybeans for 2 years and a row crop, such as cotton or corn, for 1 year. Crops respond to heavy applications of a complete fertilizer and to lime. Good management also includes maintenance of a moderate amount of organic matter in the plow layer. Contour cultivation will help to control erosion. In many places terraces and stripcropping are needed also.

Capability unit IIIe-2

This capability unit consists of deep, well-drained, sloping soils on the uplands. Their surface layer is gray to brown, very friable loamy sand. It is 6 to 12 inches thick. Their subsoil is yellowish-brown to yellowish-red, sticky, friable to firm sandy clay. The soils are—

- Faceville loamy sand, 6 to 10 percent slopes, eroded.
- Marlboro loamy sand, 6 to 10 percent slopes, eroded.

These soils have a moderate content of organic matter and a moderate natural supply of plant nutrients. They are moderately permeable and have a moderate rate of infiltration and a moderate available moisture capacity. They are acid. In the few galled spots where the subsoil is exposed, the organic-matter content is lower and tilth is poor.

These soils are suited to cotton, corn, soybeans, small grains, and peanuts. They are also suited to bahiagrass, Coastal bermudagrass, annual lespedeza, and sericea lespedeza for hay and pasture. Crops on these soils respond well to applications of fertilizer. A complete fertilizer is necessary for high yields. A moderate amount of lime is needed for some crops.

To control erosion and add needed organic matter, these soils should be in a close-growing crop at least 2 years in every 3 years. Suitable cropping systems are (1) a small grain and annual lespedeza for 2 years and a row crop for 1 year; (2) bahiagrass or bahiagrass and sericea lespedeza for 3 years or more and row crops for 2 years. All cultivation should be on the contour. Stripcropping or terraces may be needed on the longer slopes.

Capability unit IIIe-4

This capability unit consists of sloping, shallow to moderately deep, moderately well drained to well drained soils on the uplands. Their surface layer is very friable loamy sand. Generally it is 9 to 13 inches thick, but in Gilead loamy sand, thick surface, this layer is 18 to 30 inches thick. Their subsoil is firm sandy clay loam or sandy clay. It is compact or weakly cemented and retards the movement of water through the soil. The soils are—

- Gilead loamy sand, 2 to 6 percent slopes, eroded.
- Gilead loamy sand, 6 to 10 percent slopes.
- Gilead loamy sand, thick surface, 6 to 10 percent slopes.
- Vaughn loamy sand, 2 to 6 percent slopes, eroded.
- Vaughn loamy sand, 6 to 10 percent slopes.

These soils are fairly well suited to oats, cotton, corn, and watermelons. They are suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for hay and pasture. Their productivity is limited by their shallow to only moderately deep root zone and their low available moisture capacity. Gilead loamy sand, thick surface, is especially droughty.

Water erosion is a severe hazard. Good management includes keeping a close-growing crop on the soils much of the time. Suitable cropping systems are (1) sericea lespedeza or bahiagrass for 4 years and row crops for 2 years; (2) oats followed by soybeans for 2 years and a row crop for 1 year. To maintain good yields, it is necessary to apply fertilizer and to maintain the supply of organic matter. A moderate amount of lime is required for some crops. All field operations should be on the contour, and stripcropping will help to control erosion on the longer slopes. Terracing may be practical in some places. If the compact subsoil is exposed by terracing, however, tilth is very poor and is not improved easily.

Capability unit IIIe-5

This capability unit consists of deep, well-drained, sloping soils on the uplands. These soils differ from those in capability unit IIIe-1 chiefly in having a thicker surface layer. The surface layer is grayish-brown, very friable loamy sand. It is 18 to 30 inches thick. The subsoil is friable sandy loam or sandy clay loam. The soils are—

- Norfolk loamy sand, thick surface, 6 to 10 percent slopes.
- Ruston loamy sand, thick surface, 6 to 10 percent slopes.

These soils have a low to moderate content of organic matter and a low to moderate natural supply of plant nutrients. They have a low to moderate available moisture capacity and are slightly droughty. They are acid. They

are easily tilled and can be grazed without damage during most wet periods.

Because of their droughtiness and strong slope, and because of the difficulty of maintaining a high level of fertility, these soils are limited in their crop suitability and in productivity. They are fairly well suited to sweet-potatoes, watermelons, cotton, corn, oats, and soybeans. They are well suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for hay and pasture.

To control erosion and to maintain the organic-matter content, it is necessary to keep these soils in a close-growing crop 2 years in every 3 years. A suitable rotation consists of bahiagrass or sericea lespedeza, grown alone or together, for 3 or more years and a row crop for 1 year. To maintain good yields, frequent applications of a complete fertilizer are necessary. For some crops, lime is needed also. All tillage should be on the contour. Terraces, vegetated waterways, and stripcropping will help to control water erosion.

Capability unit IIIw-2

This capability unit consists of nearly level, deep, poorly drained soils. They have a surface layer of gray to black, very friable sandy loam or loam. Their subsoil is gray, firm sandy clay loam to sandy clay that is mottled with various shades of yellow, brown, and red. The soils are—

Coxville loam.
Coxville sandy loam.
Grady loam.
Grady sandy loam.

These soils are medium acid to strongly acid. They have a moderate content of organic matter and a low to moderate natural supply of plant nutrients. Permeability is slow, and the rate of infiltration is slow. The available moisture capacity is moderate to high.

In their natural state, these soils are not suited to cultivated crops and are not very productive as pasture. Except for some areas that do not have easily developed outlets, they can be drained by tile or open ditches. If adequately drained and fertilized, these soils are productive of corn, soybeans, oats, and some truck crops, and of dallisgrass, Coastal bermudagrass, tall fescue, whiteclover, and annual lespedeza for hay and pasture. Coxville soils are fairly well suited to tobacco, but Grady soils are poorly suited to this crop.

If heavy applications of fertilizer are made, some lime is used, and crop residues are returned to the soil, row crops can be grown continuously. Other suitable cropping systems are (1) tall fescue and whiteclover for 2 years or more and row crops for 2 or 3 years; (2) oats and annual lespedeza for 1 or 2 years and row crops for 1 or 2 years. Good tilth is more difficult to maintain in these soils than in the higher lying, sandier soils. If these soils are cultivated or grazed when wet, clods are formed.

Capability unit IIIw-3

Wahee fine sandy loam is the only soil in this capability unit. It is a nearly level, moderately deep soil on stream terraces. It is moderately well drained to somewhat poorly drained. The surface layer consists of 6 to 12 inches of gray to pale-brown, very friable fine sandy loam or silt loam. The subsoil is yellowish-brown, firm to very firm sandy clay or clay that is mottled with light gray and red. It is very firm and plastic at a depth of 24 inches.

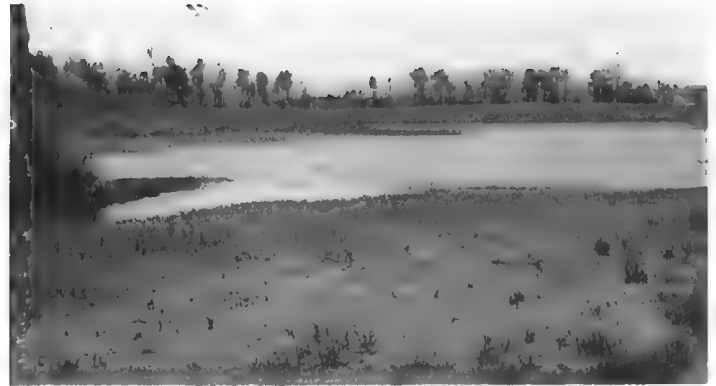


Figure 8.—Excess water on soils in subclass IIIw. This area does not have an available drainage outlet.

Permeability is slow, and the rate of infiltration is slow. The content of organic matter and the natural supply of plant nutrients are low to moderate. The available moisture capacity is moderate. The reaction ranges from slightly acid to strongly acid.

Wetness, which results from the very slow permeability of the plastic layer, is the chief limitation. Tile drains generally are not very effective, but drainage by shallow ditches will greatly improve the productivity of most of the acreage. Crops respond to heavy applications of fertilizer, to additions of organic matter, and to some lime. Yields are not so high as on the better drained, more permeable soils, even under good management. The better suited crops are oats, corn, annual lespedeza, and soybeans. Cotton is fairly well suited, but yields are limited because of wetness and the clay subsoil. Coastal bermudagrass, dallisgrass, bahiagrass, tall fescue, and whiteclover are among the better suited hay and pasture plants.

If adequately drained, fertilized, and supplied with organic matter, this soil can be used intensively for row crops. Generally, however, a rotation that consists of row crops for 2 years and close-growing crops for 2 years is better, since it will help to maintain the organic-matter content.

Capability unit IIIw-4

This capability unit consists of deep, nearly level, very poorly drained soils that have a high content of organic matter in the surface layer. Their surface layer is nearly black sandy loam or loam and is 12 to 20 inches thick. Their subsoil is gray sandy clay loam to sandy clay. The soils are—

Okenee loam.
Portsmouth loam.
Portsmouth sandy loam.

These soils have a moderate natural supply of plant nutrients and a high content of organic matter. They are strongly acid. Permeability is moderate, and the rate of infiltration is moderate. The available moisture capacity is moderate to high.

Before they can be used for crops or pasture, these soils must be drained (fig. 8). Where outlets are available, they can be drained by open ditches, tile drains, or a combination of the two. The organic-matter content, however, is reduced gradually, once the soils are drained and cropped. If they are adequately drained, and if the or-



Figure 9.—Vaucluse loamy sand, 6 to 10 percent slopes, eroded. The light patches are exposed subsoil.

ganic-matter content is maintained, these soils are well suited to corn, oats, soybeans, and truck crops. They are also well suited to dallisgrass, tall fescue, whiteclover, and annual lespedeza for hay and pasture.

If drained, fertilized, and supplied with organic matter, these soils are suited to intensive use. A rotation that will help to maintain the organic-matter content consists of tall fescue or dallisgrass and whiteclover for 3 years or more and row crops for 3 years. A well-fertilized, high-residue row crop, such as corn, will help to maintain the organic-matter content if all residues are returned to the soil.

Good tilth is easily maintained and these soils can be worked and grazed throughout a wide range of moisture content. Lime and large amounts of fertilizer are needed. Lime should be applied in the amounts indicated by soil tests and according to the needs of the crop grown. To maintain the organic-matter content, return all crop residues and cover crops to the soil. These soils are well suited to sprinkler irrigation. Truck crops, in particular, respond favorably to irrigation.

Capability unit IIIs-1

This capability unit consists of deep, nearly level to gently sloping, excessively drained soils on the higher lying uplands. Their surface layer is 30 to 36 inches thick. It consists of loose sand that is gray at the surface but grades with depth to light yellowish brown or reddish brown. Below this layer is yellowish or reddish, friable sandy loam or sandy clay loam. The soils are—

- Eustis sand, shallow, 0 to 2 percent slopes.
- Eustis sand, shallow, 2 to 6 percent slopes.
- Lakeland sand, shallow, 0 to 2 percent slopes.
- Lakeland sand, shallow, 2 to 6 percent slopes.

These soils have a low content of organic matter and a low natural supply of plant nutrients. They are rapidly permeable and have a rapid infiltration rate and a low available moisture capacity. They are medium acid to strongly acid. Because they are very sandy, these soils are droughty, are subject to wind erosion, and lose plant nutrients rapidly by leaching. They are very easily worked, however, and they can be cultivated and grazed at any time.

Cotton, watermelons, sweetpotatoes, velvetbeans, corn, oats, and rye are among the better suited crops. Coastal bermudagrass, bahiagrass, and sericea lespedeza are

among the better suited perennial hay and pasture plants. Suitable rotations are (1) oats or rye followed by early hairy indigo for 2 years and a row crop for 1 year; (2) bahiagrass, Coastal bermudagrass, or sericea lespedeza for 4 years and row crops for 2 years.

A large amount of fertilizer and a small amount of lime are needed. Since plant nutrients are leached so rapidly from these soils, however, applications of fertilizer should be smaller and more frequent than on the soils that contain more clay. Water erosion is not a serious hazard, but the open areas need to be protected against wind erosion.

Capability unit IIIs-4

This unit consists of gently sloping, moderately well drained, moderately deep soils. Their surface layer is gray to grayish-brown, very friable loamy sand that is 18 to 30 inches thick. Their subsoil is yellowish-brown to reddish-brown, compact or weakly cemented, slowly permeable sandy clay loam to sandy clay. The soils are—

- Gilead loamy sand, thick surface, 2 to 6 percent slopes.
- Vaucluse loamy sand, thick surface, 2 to 6 percent slopes.

These soils have a low content of organic matter and a low natural supply of plant nutrients. Their available moisture capacity is low. They are medium acid to strongly acid. They are easily worked and can be grazed throughout a wide range of moisture content. Their productivity is limited by the compact subsoil, but crops respond well to adequate applications of fertilizer.

These soils are fairly well suited to cotton, corn, oats, and watermelons. They are suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for hay and pasture.

A suitable rotation consists of sericea lespedeza or bahiagrass for 2 years and a row crop for 1 year. Applications of a complete fertilizer and of some lime and the maintenance of a moderate organic-matter content are among the requirements of good management. Contour cultivation, contour stripcropping, terraces, and vegetated waterways help to control water and wind erosion.

Capability unit IVe-4

The soils in this unit are well drained, sloping to strongly sloping, and shallow to moderately deep. Their surface layer is grayish-brown, very friable loamy sand. Generally it is 12 to 18 inches thick, but in Vaucluse loamy sand, thick surface, 6 to 15 percent slopes, the surface layer is 18 to 30 inches thick. The subsoil is yellowish or reddish, firm sandy clay loam. Compact clayey material occurs at a depth of 12 to 24 inches. There are some eroded patches where the subsoil is exposed (fig. 9). The soils are—

- Gilead loamy sand, 6 to 10 percent slopes, eroded.
- Gilead loamy sand, 10 to 15 percent slopes.
- Vaucluse loamy sand, 6 to 10 percent slopes, eroded.
- Vaucluse loamy sand, 10 to 15 percent slopes.
- Vaucluse loamy sand, thick surface, 6 to 15 percent slopes.

These soils have a low content of organic matter and a low natural supply of plant nutrients. They are acid. The upper layer is moderately permeable to rapidly permeable, but the compact layer is slowly permeable. The available moisture capacity is low. Because of their strong slope and their shallowness to compact, slowly permeable material, these soils are very susceptible to water

erosion if cultivated. Their root zone is fairly shallow. They are droughty, especially the eroded soils that have the compact layer close to the surface.

Although these soils are not well suited to row crops, they are suited to small grains, which afford a close-growing cover and mature before the drier part of the growing season. The most suitable hay and pasture plants are sericea lespedeza and bahiagrass. Corn and soybeans are the most suitable row crops. They should be grown no more frequently than 1 year in every 4 years. Sericea lespedeza or bahiagrass should be grown the other 3 years. Heavy applications of a complete fertilizer and some lime are needed. Good tilth is difficult to maintain in the eroded soils in which the clayey subsoil material is part of the plow layer. Grazing should be carefully controlled in wet periods to prevent compaction by trampling.

Capability unit IVw-2

Leaf fine sandy loam is the only soil in this capability unit. It is nearly level and poorly drained and occurs on stream terraces. The surface layer is very friable sandy loam or fine sandy loam, 6 to 12 inches thick. Its color ranges from gray to nearly black. The subsoil is firm clay loam to very firm sandy clay or silty clay. It is gray mottled with yellowish brown and red.

Permeability is slow, and the rate of infiltration is slow. The content of organic matter and the natural supply of plant nutrients are low to moderate. The available moisture capacity is moderate. The reaction is acid. Soil drainage and root development are impeded by the slowly permeable subsoil.

This soil must be drained before it can be used for cultivated crops or for hay or pasture. Tile drainage is not effective. In some areas adequate drainage outlets for ditches cannot be developed, and these areas have very limited use for either pasture or woodland. Areas that can be drained adequately are suited to corn, soybeans, oats, and truck crops. They are also suited to dallisgrass, Coastal bermudagrass, tall fescue, whiteclover, and annual lespedeza for hay and pasture.

A suitable cropping system consists of tall fescue and whiteclover for 2 years or more and a row crop for 1 year. Under good management, row crops and truck crops can be grown each year. Heavy applications of fertilizer and some lime are needed, as well as additions of organic matter.

Capability unit IVw-3

The soils in this unit are poorly drained to very poorly drained, nearly level to very gently sloping, deep, and moderately permeable. They occur at the head of drainageways and along their courses. Except in the driest periods, the water table is at or near the surface. Areas along the larger drainageways are subject to overflow. These soils consist mostly of dark-gray, very friable loamy sand that, at a depth of 8 to 12 inches, grades to grayer, friable sandy loam or sandy clay loam. The soils are—

Myatt sandy loam.
Rains loamy sand.

These soils have a low to moderate natural supply of plant nutrients and a low to moderate content of organic matter. They are acid. If adequately drained, they would have a moderate to moderately high available moisture capacity.

In this county, chiefly because of the difficulty of drainage, these soils are not considered suitable for cultivated crops. They occur in narrow strips or in small areas, few of which have adequate drainage outlets. If outlets are available, tile drains, ditches, or both, can be used. In areas where the sublayers are loamy sand or sandy loam, however, the ditches and tile drains would soon be filled with soil material.

Adequately drained areas would be suitable for row crops that are tolerant of wetness or that can be planted late enough in spring to avoid the wet periods. Moisture-tolerant perennials are suitable pasture plants. Heavy applications of fertilizer are needed. Some lime is needed also for most crops.

At the present time, hardwood forest is the best use for most areas of these soils.

Capability unit IVs-1

This unit consists of deep, sandy, gently sloping to sloping, excessively drained soils on the uplands and stream terraces. Their surface layer is gray to brown, loose sand. Their subsoil is yellow to yellowish-red sand or loamy sand. The soils are—

Eustis sand, 0 to 6 percent slopes.
Eustis sand, shallow, 6 to 10 percent slopes.
Lakeland sand, 0 to 6 percent slopes.
Lakeland sand, 6 to 15 percent slopes.
Lakeland sand, shallow, 6 to 10 percent slopes.
Lakeland sand, terrace, 0 to 6 percent slopes.

These soils have a low content of organic matter and a low natural supply of plant nutrients. They are rapidly permeable and have a high infiltration rate. They are droughty and lose added plant nutrients rapidly through leaching. They are easily tilled and can be worked or grazed at any time, regardless of wetness. They are medium acid to strongly acid. The more strongly sloping parts of Lakeland sand, 6 to 15 percent slopes, are not suitable for cultivated crops.

Corn, soybeans, early hairy indigo, velvetbeans, watermelons, and rye are among the better suited crops. Under good management, yields are fair. Peaches grow fairly well on these soils, particularly on the higher lying areas where the hazard of frost is slight. Sericea lespedeza, Coastal bermudagrass, and bahiagrass, grown alone or in combination, are suitable hay and pasture plants. Under good management, yields are good.

Suitable cropping systems for these soils are (1) early hairy indigo for 3 years and corn and volunteer indigo for 1 year; (2) bahiagrass, grown alone or with sericea lespedeza, for 3 years or more and a row crop for 1 year. All crops and pasture require large amounts of a complete fertilizer. Since plant nutrients are leached so rapidly from these sandy soils, it is better to apply small amounts of fertilizer frequently than to apply a large amount at one time. Most crops also respond to a small amount of lime.

Water erosion is not a hazard on the gentle slopes, but it is a slight to moderate hazard on the stronger slopes. Contour cultivation will help to control runoff, but terraces are not effective on these sandy soils. The more open areas are subject to wind erosion. Stripcropping, windbreaks, and careful row arrangement will help to control blowing.

Capability unit Vw-2

This capability unit consists of nearly level, deep, poorly drained to very poorly drained soils that occur on the low part of stream terraces and at the head of and along the course of drainageways in the uplands. The water table is at or near the surface except in the very driest parts of the year. The surface layer of these soils is gray to nearly black, very friable loamy sand or sandy loam. Their subsoil is friable loamy sand to sandy clay loam. The soils are—

Mixed alluvial land.
Plummer loamy sand.
Plummer sand, terrace.
Rutledge loamy sand.

The content of organic matter ranges from low in Plummer soils to high in the surface layer of Rutledge loamy sand. The natural supply of plant nutrients is low. If drained, these soils have a moderate available moisture capacity. This results chiefly from their position, since their sandy texture greatly restricts their water-holding capacity. The soils are strongly acid.

Because of the continual wetness, the great difficulty of developing adequate drainage outlets, and the difficulty of maintaining tile lines and drainage ditches in such sandy soils, most of the acreage is not suited to cultivated crops. By fertilization, cleared areas can be improved for native pasture grasses, such as carpetgrass.

Capability unit Vle-2

This capability unit consists of sloping to strongly sloping, moderately well drained, shallow soils on the uplands. In places the surface layer is 5 to 12 inches of very friable loamy sand. In other places this layer is less than 5 inches thick. The subsoil is compact, slowly permeable sandy clay loam. In the more severely eroded spots, especially on the stronger slopes, the compact material is at the surface. The soils are—

Gilead loamy sand, 10 to 15 percent slopes, eroded.
Vaucluse loamy sand, 10 to 15 percent slopes, eroded.
Vaucluse loamy sand, 15 to 25 percent slopes, eroded.
Vaucluse sandy loam, 6 to 10 percent slopes, severely eroded.

These soils have a low content of organic matter and a low natural supply of plant nutrients. They are medium acid to strongly acid. The available moisture capacity is low, especially in the more severely eroded areas.

Because of their strong slope, their droughtiness, and their extreme susceptibility to erosion, these soils are very poorly suited to cultivated crops and poorly suited to pasture. If used for pasture, they require heavy applications of fertilizer. Sericea lespedeza and bahiagrass are the better suited pasture plants, but the carrying capacity of pastures is limited by the low available moisture capacity of the soils.

The best use for these soils is woodland. Most of the acreage is so used.

Capability unit Vlw-1

Wehadkee silt loam is the only soil in this capability unit. It is very poorly drained and nearly level. It formed in recent alluvial deposits on first bottoms. It is subject to frequent and prolonged overflow. The surface layer is dark grayish-brown silt loam, 2 to 4 inches thick. It is underlain by mottled silty clay loam or clay.

This soil has a moderate content of organic matter and a moderately high natural supply of plant nutrients. It is medium acid to strongly acid. It is slowly permeable. If the soil were drained, its available moisture capacity would be moderately high. In most places, however, drainage is not feasible, because adequate drainage outlets generally are lacking and because floods occur so frequently.

Drained areas are productive of water-tolerant pasture plants and of some row crops, such as soybeans and corn. Yields vary greatly according to wetness during the growing season. Forest is the best use for this soil. Some water control is necessary before productive stands of pine can be established.

Capability unit VIIw-1

The land type, Swamp, is the only member of this capability unit. It is nearly level and is covered by water much of the time. The soil material is extremely variable in texture, color, and thickness and shows almost no profile development. It occurs on the first bottoms of the major streams in Lee County.

Because of its low position, this land type cannot be drained. It is best used to produce hardwoods. Black-gum, tupelo-gum, sweetgum, yellow-poplar, and cypress grow well. Selective cutting is the principal management requirement.

Capability unit VIIs-1

Lakewood sand, 0 to 10 percent slopes, is the only soil in this capability unit. It is nearly level to sloping and is excessively drained. Its surface layer is light-gray, very loose sand that extends to a depth of 20 inches. Its subsoil is reddish-brown sand that is slightly cemented in the uppermost inch or two. Under this layer is brownish-yellow, loose sand containing pockets of dark-colored sand that is high in organic-matter content.

Permeability is very rapid, and the infiltration rate is rapid. The content of organic matter is low, and the natural supply of plant nutrients is very low. Added fertilizer is leached quickly from the soil. The available moisture capacity is very low. The reaction is strongly acid.

Because of its droughtiness and its very low content of plant nutrients and because added plant nutrients are leached out so quickly, Lakewood sand is not suited to cultivated crops. It is not very productive as pasture. Its best use is woodland. Loblolly pine and slash pine are among the better suited trees.

Capability unit VIIs-2

This capability unit consists of the miscellaneous land types, Borrow pits and Gullied land. Gullied land is sloping to steep, severely eroded land. Borrow pits are areas from which soil material has been removed for road building or some other use.

These land types are not suitable for cultivated crops or for pasture. With considerable effort, bicolor lespedeza can be established in some areas as food for wildlife. Establishing pine trees is difficult, but it can be done. Some of the deeper borrow pits hold water the year round and can be stocked with fish.

Estimated Yields and Crop Suitability

The first part of this subsection gives the estimated average acre yields of principal crops on the different soils. The second part deals with the relative suitability of some of the soils for crops that are commonly grown or that are known to be suited to the soils and to the climate.

Estimated yields

Table 1 gives estimated long-term, average acre yields of the principal crops grown in the county. Yields are given for each soil under two levels of management. In the A columns are listed yields to be expected under the management now prevailing in the county. The yields in the B columns are those to be expected under improved management.

Generally, yields in the B columns are higher than those in the A columns. The yields for high-value crops, however, may be little different in columns A and B because they are now grown at close to the highest level of management believed to be feasible.

The figures in the A columns are based largely on observations made by members of the soil survey party; on information obtained by interviewing farmers and other agricultural workers who have had experience with the soils and crops of the area; and on comparisons with yield

tables for other counties in South Carolina that have similar soils. For most soils, however, records of specific crop yields were not available.

The requirements of good management vary according to the soils, but the following practices are considered requisite to obtaining the yields in the B columns: (1) The proper choice and rotation of crops; (2) the correct use of commercial fertilizers, lime, and manure; (3) use of proper tillage methods; (4) return of organic matter to the soils; (5) adequate control of water; (6) maintaining or improving the productivity and workability of the soils; and (7) conservation of soil material, plant nutrients, and soil moisture.

The yields in the B columns are based largely on estimates made by men who, like the management agronomist for the Soil Conservation Service in this area, have had experience with the soils and crops of the county. The known deficiencies of the soils were considered in judging how much yields might increase if these deficiencies were corrected within reasonable limits. These limits cannot be precisely defined, nor can response to good management be precisely predicted. By comparing yields in the B columns with those in the A columns, however, one may gain some idea of the response a soil will make to good management. On practically all soils of the county, more intensive management will bring increased yields.

TABLE 1.—*Estimated average acre yields of the principal crops under two levels of management*

[Yields in columns A are those obtained under common management practices; those in columns B are yields to be expected under improved management practices. Absence of figure indicates crop is not commonly grown]

Soil	Corn		Cotton (lint)		Tobacco		Soybeans		Oats		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
	<i>Bu.</i>	<i>Bu.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Lb.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Bu.</i>	<i>Cow-acre-days¹</i>	<i>Cow-acre-days¹</i>
Cahaba sandy loam.....	35	80	375	500	1,200	1,800	20	35	40	70	180	365
Coxville loam.....	30	75	150	400	800	1,200	20	35	40	75	200	360
Coxville sandy loam.....	30	75	150	400	800	1,200	20	35	40	75	200	360
Dunbar sandy loam.....	45	100	450	750	1,500	2,500	25	40	50	90	280	420
Eustis sand, 0 to 6 percent slopes.....	20	35	175	350	800	1,300	-----	-----	25	50	120	280
Eustis sand, shallow, 0 to 2 percent slopes.....	25	50	200	450	-----	-----	-----	-----	30	50	125	300
Eustis sand, shallow, 2 to 6 percent slopes.....	20	40	200	400	-----	-----	-----	-----	25	45	125	300
Eustis sand, shallow, 6 to 10 percent slopes.....	15	35	150	350	-----	-----	-----	-----	20	40	120	250
Faceville loamy sand, 0 to 2 percent slopes.....	45	100	500	1,000	1,500	2,300	25	40	50	90	200	400
Faceville loamy sand, 2 to 6 percent slopes.....	40	100	500	1,000	1,400	2,200	25	40	50	90	200	400
Faceville loamy sand, 2 to 6 percent slopes, eroded.....	35	90	500	1,000	1,200	2,000	25	40	50	90	200	400
Faceville loamy sand, 6 to 10 percent slopes, eroded.....	30	75	350	550	900	1,300	20	35	40	80	180	380
Gilead loamy sand, 0 to 2 percent slopes.....	35	65	300	600	1,000	1,600	20	35	40	75	180	365
Gilead loamy sand, 2 to 6 percent slopes.....	35	65	300	600	900	1,500	20	35	40	75	175	360
Gilead loamy sand, 2 to 6 percent slopes, eroded.....	30	60	250	550	800	1,300	15	25	35	65	160	350
Gilead loamy sand, 6 to 10 percent slopes.....	20	40	200	500	-----	-----	-----	-----	25	60	120	320
Gilead loamy sand, 6 to 10 percent slopes, eroded.....	15	30	175	300	-----	-----	-----	-----	20	45	120	300
Gilead loamy sand, 10 to 15 percent slopes.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	100	250
Gilead loamy sand, 10 to 15 percent slopes, eroded.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Gilead loamy sand, thick surface, 2 to 6 percent slopes.....	25	50	200	400	900	1,400	12	20	35	60	140	350
Gilead loamy sand, thick surface, 6 to 10 percent slopes.....	20	45	175	350	800	1,300	12	20	35	55	140	350
Goldshoro loamy sand.....	45	100	400	1,000	1,700	2,500	20	40	50	90	270	420
Grady loam.....	30	75	150	400	-----	-----	20	35	40	70	200	360
Grady sandy loam.....	30	75	150	400	-----	-----	20	35	40	70	200	360
Izagora sandy loam.....	35	80	250	700	1,200	1,600	20	35	40	75	200	365
Kalmia loamy sand.....	35	80	375	500	1,200	1,800	20	35	40	70	180	365
Kalmia loamy sand, thick surface.....	30	60	300	500	1,200	1,800	15	25	35	70	160	350

TABLE 1.—*Estimated average acre yields of the principal crops under two levels of management—Continued*

Soil	Corn		Cotton (lint)		Tobacco		Soybeans		Oats		Pasture	
	A	B	A	B	A	B	A	B	A	B	A	B
	Bu.	Bu.	Lb.	Lb.	Lb.	Lb.	Bu.	Bu.	Bu.	Bu.	Cow- acre- days ¹	Cow- acre- days ¹
Lakeland sand, 0 to 6 percent slopes	20	35	175	350	800	1,300	10	18	25	50	120	280
Lakeland sand, 6 to 15 percent slopes							10	15				
Lakeland sand, shallow, 0 to 2 percent slopes	25	50	200	450			12	18	30	55	125	300
Lakeland sand, shallow, 2 to 6 percent slopes	20	40	200	400			10	18	25	45	125	300
Lakeland sand, shallow, 6 to 10 percent slopes	15	35	150	350			10	15	20	40	120	250
Lakeland sand, terrace, 0 to 6 percent slopes	20	35	175	350	800	1,300	10	18	25	50	120	280
Lakewood sand, 0 to 10 percent slopes												
Leaf fine sandy loam	20	50					15	25	25	50	140	365
Local alluvial land	40	80	300	650	1,200	1,800	20	40	50	80	180	365
Lynchburg sandy loam	45	90	350	900	1,200	1,800	20	35	50	80	280	420
Magnolia loamy sand, 0 to 2 percent slopes	45	100	500	1,000	1,600	2,500	25	40	50	90	200	400
Magnolia loamy sand, 2 to 6 percent slopes, eroded	35	90	500	1,000	1,200	2,000	25	40	50	90	200	400
Marlboro loamy sand, 0 to 2 percent slopes	45	100	500	1,000	1,700	2,500	25	40	50	90	200	400
Marlboro loamy sand, 2 to 6 percent slopes	45	90	500	1,000	1,600	2,500	25	40	50	90	200	400
Marlboro loamy sand, 2 to 6 percent slopes, eroded	35	90	500	1,000	1,200	2,000	25	40	50	90	200	400
Marlboro loamy sand, 6 to 10 percent slopes, eroded	30	75	350	550	900	1,300	20	35	40	80	180	380
Mixed alluvial land												
Myatt sandy loam	20	40					12	18	30	50		
Norfolk loamy fine sand, 0 to 2 percent slopes	45	90	450	900	1,700	2,500	25	35	50	85	270	420
Norfolk loamy sand, 0 to 2 percent slopes	45	90	450	900	1,700	2,500	25	35	50	85	270	420
Norfolk loamy sand, 2 to 6 percent slopes	45	85	450	900	1,700	2,500	25	35	50	85	270	420
Norfolk loamy sand, 2 to 6 percent slopes, eroded	40	80	450	900	1,500	2,300	25	35	50	85	270	420
Norfolk loamy sand, 6 to 10 percent slopes	40	75	400	800	1,000	1,800	20	30	45	80	220	400
Norfolk loamy sand, 6 to 10 percent slopes, eroded	30	65	350	650			15	25	40	65	220	400
Norfolk loamy sand, thick surface, 0 to 2 percent slopes	35	65	375	750	1,200	2,000	18	30	40	70	140	350
Norfolk loamy sand, thick surface, 2 to 6 percent slopes	30	60	350	650	1,200	2,000	15	30	40	70	140	350
Norfolk loamy sand, thick surface, 6 to 10 percent slopes	25	50	225	425	900	1,200	15	25	35	60	120	320
Okenece loam	30	75					20	35	40	75	200	360
Orangeburg loamy sand, 0 to 2 percent slopes	45	90	450	900	1,500	2,200	25	35	50	85	270	420
Orangeburg loamy sand, 2 to 6 percent slopes	45	85	450	900	1,400	2,000	25	35	50	85	270	420
Orangeburg loamy sand, 2 to 6 percent slopes, eroded	40	80	400	800			20	30	45	80	200	400
Orangeburg loamy sand, 6 to 10 percent slopes, eroded	30	75	300	450			18	30	40	75	180	365
Plummer loamy sand											90	200
Plummer sand, terrace												
Portsmouth loam	30	75					20	35	40	75	200	360
Portsmouth sandy loam	30	75					20	35	40	75	200	360
Rains loamy sand	20	40					12	18	30	50	90	250
Ruston loamy sand, 0 to 2 percent slopes	45	90	450	900	1,500	2,200	25	35	50	85	270	420
Ruston loamy sand, 2 to 6 percent slopes	45	85	450	900	1,500	2,200	25	35	50	85	270	420
Ruston loamy sand, 2 to 6 percent slopes, eroded	40	80	450	900	1,300	2,000	25	35	50	85	270	420
Ruston loamy sand, 6 to 10 percent slopes	35	70	400	800			18	30	45	80	230	400
Ruston loamy sand, 6 to 10 percent slopes, eroded	25	40	250	375			15	20	35	60	120	350
Ruston loamy sand, thick surface, 0 to 2 percent slopes	35	65	375	700	1,200	2,000	18	30	40	70	140	350
Ruston loamy sand, thick surface, 2 to 6 percent slopes	30	60	300	625	1,200	2,000	15	30	40	70	140	350
Ruston loamy sand, thick surface, 6 to 10 percent slopes	25	45	200	400			15	25	35	65	120	320
Rutledge loamy sand											160	350
Swamp												
Vaughan loamy sand, 2 to 6 percent slopes	20	40	175	375			12	20	35	60	90	300
Vaughan loamy sand, 2 to 6 percent slopes, eroded	18	35	175	350			12	18	35	50	90	300
Vaughan loamy sand, 6 to 10 percent slopes	18	35	150	350			12	20	30	50	90	250
Vaughan loamy sand, 6 to 10 percent slopes, eroded											90	250
Vaughan loamy sand, 10 to 15 percent slopes												
Vaughan loamy sand, 10 to 15 percent slopes, eroded												
Vaughan loamy sand, 15 to 25 percent slopes, eroded												
Vaughan loamy sand, thick surface 2 to 6 percent slopes	15	35	150	350	600	1,200	10	20	30	55	90	250
Vaughan loamy sand, thick surface, 6 to 15 percent slopes	15	30	150	300			10	20	30	50	90	250
Vaughan sandy loam, 6 to 10 percent slopes, severely eroded												
Wahee fine sandy loam	25	60	200	400	600	1,200	15	25	35	65	180	350
Wehadkee silt loam												

¹ The number of days 1 acre will support 1 animal unit (1 cow, steer, horse; 5 hogs; or 7 sheep or goats) without injury to the pasture.

Relative suitability of the soils for crops

Table 2 gives the relative suitability of the soils in capability classes I through IV for crops that are commonly grown or for which the soils and climate are known to be suitable. The degree of suitability of the soil for the particular crop is expressed by index numbers.

Soils that have index number 1 are the most desirable for the given crop. On these soils, yields are more dependable, the hazards are less than on other soils in the county, and the least intensive management is required.

Soils having index number 2 are suited to the crop, but they are materially limited by excess moisture, lack of moisture, a shallow root zone, low fertility, or some other factor. Index number 3 indicates that good yields cannot be expected without intensive management practices that generally do not pay. An index of 4 indicates that the soil is not suited to the particular crop.

The use of all the soils, regardless of their crop suitability rating, should be planned according to their capabilities.

TABLE 2.—*Relative suitability of the soils in capability classes I through IV for specified crops*

[Number 1 means soil is well suited; 2 means fairly well suited; 3 means less well suited; and 4 means not suited]

Soil	Row crops					Truck crops										Small grains		Grazing crops					Orchard and vineyard crops		Crops for wild-life		Legumes											
	Corn	Cotton	Grain sorghum	Peanuts	Soybeans	Tobacco	Green beans	Cantaloups	Cucumbers	Leafy vegetables	Okra	Peppers	Potatoes and cabbage	Sweetpotatoes	Tomatoes	Watermelons	Barley	Oats	Rye	Wheat	Bahiagrass	Bermudagrass	Dallisgrass	Tall fescue	Millet ¹	Ryegrass	Grapes	Peaches	Pecans	Bicolor lespedeza	Browntop millet	Alfalfa	Crimson clover	White clover	Cowpeas	Annual lespedeza	Sericea lespedeza	
Cahaba sandy loam.....	2	2	2	2	2	2	3	2	3	3	2	2	3	2	2	2	2	2	2	2	1	1	4	4	2	2	2	4	2	1	1	3	2	3	1	3	1	3
Coxville sandy loam.....	2	3	2	4	2	3	2	4	3	3	3	4	4	3	4	4	4	2	3	3	2	2	2	2	2	2	2	4	4	4	4	2	4	3	1	3	1	4
Coxville loam.....	2	3	2	4	2	4	2	4	3	3	2	3	4	3	4	4	4	2	3	3	2	2	2	2	2	2	2	4	4	4	4	2	4	3	1	3	1	4
Dunbar sandy loam.....	1	2	2	4	1	2	2	4	3	3	2	3	2	4	3	3	3	1	2	2	2	2	2	2	2	2	4	4	3	3	2	4	3	1	3	1	3	
Eustis sand, 0 to 6 percent slopes.....	3	3	3	3	3	3	4	3	4	3	3	3	4	3	3	2	4	3	3	4	2	2	4	4	3	3	3	2	3	2	3	4	4	4	3	4	2	
Eustis sand, shallow, 0 to 2 percent slopes.....	3	3	3	3	3	3	4	3	3	3	3	3	4	2	3	2	3	3	2	4	2	2	4	4	3	3	2	2	3	2	2	4	3	4	2	4	2	
Eustis sand, shallow, 2 to 6 percent slopes.....	3	3	3	3	3	4	4	3	3	3	3	3	4	2	3	2	3	3	2	4	2	2	4	4	3	3	2	2	3	2	3	4	3	4	2	4	2	
Eustis sand, shallow, 6 to 10 percent slopes.....	4	4	4	4	4	4	4	3	4	4	4	4	4	3	4	2	3	3	3	4	3	3	4	4	3	3	3	3	4	2	3	4	4	4	3	4	2	
Faceville loamy sand, 0 to 2 percent slopes.....	1	1	1	1	1	2	3	1	2	3	2	1	3	2	2	2	1	1	1	1	1	1	3	2	1	1	1	1	1	1	1	1	2	1	3	1	3	
Faceville loamy sand, 2 to 6 percent slopes.....	1	1	1	1	1	2	3	1	2	3	2	1	3	2	2	2	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1	1	2	1	4	1	3	
Faceville loamy sand, 2 to 6 percent slopes, eroded.....	1	1	1	1	1	3	3	2	3	3	2	1	3	3	2	3	1	1	1	2	1	1	4	4	1	1	1	1	1	1	1	1	3	2	4	1	3	
Faceville loamy sand, 6 to 10 percent slopes, eroded.....	3	3	3	4	3	4	3	3	3	4	3	3	4	4	3	4	3	2	2	3	2	2	4	4	2	2	2	2	2	1	2	4	3	4	2	3	2	
Gilead loamy sand, 0 to 2 percent slopes.....	2	2	2	3	2	3	2	2	2	2	2	2	3	3	3	2	2	2	2	2	2	2	3	3	2	2	3	3	3	2	2	4	2	3	2	2	2	
Gilead loamy sand, 2 to 6 percent slopes.....	2	2	2	3	2	3	2	2	2	3	3	3	3	3	3	2	2	2	2	3	2	2	3	3	2	2	3	3	3	2	2	4	2	3	2	3	2	
Gilead loamy sand, 2 to 6 percent slopes, eroded.....	2	2	2	3	2	4	2	3	3	3	3	3	4	4	3	3	2	2	2	3	2	2	4	4	2	2	3	3	3	2	2	4	3	4	2	3	2	
Gilead loamy sand, 6 to 10 percent slopes.....	3	3	3	3	3	4	3	3	3	4	4	4	4	4	4	3	3	3	3	4	2	2	4	4	3	3	3	3	3	2	2	4	4	4	2	4	2	
Gilead loamy sand, 6 to 10 percent slopes, eroded.....	4	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	3	3	3	4	3	3	4	4	3	3	4	4	4	3	3	4	4	4	3	4	3	
Gilead loamy sand, 10 to 15 percent slopes.....	4	3	4	4	3	4	4	4	4	4	4	4	4	4	4	3	3	3	3	4	3	3	4	4	3	3	4	4	4	3	3	4	4	4	3	4	3	
Gilead loamy sand, thick surface, 2 to 6 percent slopes.....	3	2	2	3	3	3	4	3	3	3	3	3	3	2	3	2	3	3	2	3	2	2	4	4	3	3	3	3	3	2	2	4	3	4	3	4	2	
Gilead loamy sand, thick surface, 6 to 10 percent slopes.....	3	3	3	3	3	4	4	4	4	3	4	4	4	3	3	2	3	3	2	4	2	2	4	4	3	3	3	3	3	2	2	4	4	4	3	4	2	
Goldsboro loamy sand.....	1	2	1	2	1	1	2	2	2	2	1	1	2	2	2	3	2	1	2	2	1	1	3	3	1	1	2	4	2	2	1	4	2	2	2	2	2	
Grady loam.....	2	3	2	4	2	4	2	4	3	3	2	3	3	4	4	4	4	2	2	3	2	2	2	2	2	2	2	4	4	4	4	2	4	2	1	3	1	4
Grady sandy loam.....	2	3	2	4	2	4	2	4	2	2	2	3	3	4	4	4	4	2	2	3	2	2	2	2	2	2	2	4	4	4	4	2	4	2	1	3	1	4
Izagara sandy loam.....	2	2	2	3	2	2	2	3	3	3	2	3	3	3	3	3	3	2	2	3	2	2	2	3	3	2	2	3	4	2	2	2	4	2	3	3	2	2
Kalmia loamy sand.....	2	2	2	2	2	2	3	2	3	3	2	2	2	3	2	2	2	2	2	2	1	1	4	4	2	2	2	3	2	2	1	2	4	2	4	1	4	1

See footnotes at end of table.

TABLE 2.—*Relative suitability of the soils in capability classes I through IV for specified crops—Continued*

[Number 1 means soil is well suited; 2 means fairly well suited; 3 means less well suited; and 4 means not suited]

Soil	Row crops						Truck crops										Small grains				Grazing crops					Orchard and vineyard crops			Crops for wild-life		Legumes							
	Corn	Cotton	Grain sorghum	Peanuts	Soybeans	Tobacco	Green beans	Cantaloups	Cucumbers	Leafy vegetables	Okra	Peppers	Potatoes and cabbage	Sweetpotatoes	Tomatoes	Watermelons	Barley	Oats	Rye	Wheat	Bahiagrass	Bermudagrass	Dallisgrass	Tall fescue	Millet ¹	Ryegrass	Grapes	Peaches	Pecans	Bicolor lespedeza	Browntop millet	Alfalfa	Crimson clover	White clover	Cowpeas	Annual lespedeza	Sericea lespedeza	
Kalmia loamy sand, thick surface.....	3	2	2	2	2	3	4	3	3	3	3	3	4	2	3	2	3	2	2	3	2	2	4	4	2	2	2	3	2	1	2	4	3	4	2	4	1	
Lakeland sand, 0 to 6 percent slopes.....	3	3	3	3	3	3	4	3	4	3	3	4	4	3	3	2	4	3	2	4	2	2	4	4	3	3	3	2	3	2	3	4	4	4	3	4	2	
Lakeland sand, shallow, 0 to 2 percent slopes.....	3	2	3	2	3	3	4	3	3	3	3	4	4	2	3	1	4	3	2	3	2	2	4	4	3	3	3	2	2	2	2	4	3	4	2	4	2	
Lakeland sand, shallow, 2 to 6 percent slopes.....	3	2	3	2	3	3	4	3	3	4	4	4	4	2	4	1	4	3	2	4	2	2	4	4	3	3	3	2	2	2	2	4	3	4	2	4	2	
Lakeland sand, shallow, 6 to 10 percent slopes.....	4	3	3	3	3	4	4	3	3	4	4	4	4	3	4	1	4	3	2	4	2	2	4	4	3	3	3	2	2	2	2	4	4	4	2	4	2	
Lakeland sand, 6 to 15 percent slopes ²	4	3	3	3	3	4	4	3	3	4	4	4	4	3	4	1	4	3	2	4	2	2	4	4	3	3	3	2	2	2	2	4	4	4	2	4	2	
Lakeland sand, terrace, 0 to 6 percent slopes.....	3	3	3	3	3	3	4	3	3	4	3	4	4	3	3	2	4	3	2	4	2	2	4	4	3	2	4	3	3	2	2	4	4	4	3	4	2	
Leaf fine sandy loam.....	3	4	3	4	3	4	3	4	3	3	3	4	3	4	4	4	4	3	3	4	2	3	2	3	3	3	4	4	4	4	2	4	3	2	3	1	4	
Local alluvial land.....	1	2	1	3	1	3	1	2	2	1	1	2	1	3	3	3	1	2	2	2	1	1	2	2	1	1	3	4	2	2	1	4	2	2	1	2		
Lynchburg sandy loam.....	1	2	1	4	1	1	1	4	2	2	1	2	2	3	3	3	3	2	2	3	1	1	2	3	1	2	4	4	4	4	1	4	3	2	2	1	4	
Magnolia loamy sand, 0 to 2 percent slopes.....	1	1	1	1	1	2	3	1	2	2	2	1	3	2	2	2	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1	1	2	1	3	1	2	1
Magnolia loamy sand, 2 to 6 percent slopes, eroded.....	2	1	1	2	1	3	3	1	2	2	2	2	3	3	2	3	1	1	1	1	1	1	4	4	1	1	1	1	1	1	1	1	3	2	4	1	2	1
Marlboro loamy sand, 0 to 2 percent slopes.....	1	1	1	1	1	1	3	1	2	2	2	1	3	2	1	2	1	1	1	1	1	1	3	3	1	1	1	1	1	1	1	1	2	1	3	1	2	1
Marlboro loamy sand, 2 to 6 percent slopes.....	1	1	1	1	1	2	3	1	2	2	2	1	3	2	1	2	1	1	1	1	1	1	3	4	1	1	1	1	1	1	1	1	3	1	4	1	2	1
Marlboro loamy sand, 2 to 6 percent slopes, eroded.....	2	1	1	2	1	3	3	2	2	2	2	1	3	3	2	3	1	1	1	1	1	1	4	4	1	1	1	1	1	1	1	1	4	3	4	1	2	1
Marlboro loamy sand, 6 to 10 percent slopes, eroded.....	3	3	2	4	2	4	4	4	4	4	3	3	4	4	3	4	3	2	2	3	2	2	4	4	2	2	2	2	2	2	2	4	4	4	2	3	1	
Myatt sandy loam.....	3	4	3	4	3	4	3	4	4	3	3	4	3	4	4	4	4	3	3	4	2	2	3	3	3	3	4	4	4	4	2	4	4	3	3	4		
Norfolk loamy fine sand, 0 to 2 percent slopes.....	1	1	1	1	1	1	3	1	2	2	2	1	3	1	1	1	1	1	1	2	1	1	3	4	1	1	1	1	1	1	1	1	3	1	4	1	3	1
Norfolk loamy sand, 0 to 2 percent slopes.....	1	1	1	1	1	1	3	1	2	2	2	1	3	1	1	1	1	1	1	2	1	1	3	4	1	1	1	1	1	1	1	1	3	1	4	1	3	1
Norfolk loamy sand, 2 to 6 percent slopes.....	1	1	1	1	1	1	3	2	2	3	3	2	3	1	1	1	1	1	1	2	1	1	4	4	1	1	1	1	1	1	1	1	4	2	4	1	3	1
Norfolk loamy sand, 2 to 6 percent slopes, eroded.....	2	2	2	2	1	2	4	3	3	4	3	3	4	2	1	2	1	1	1	2	1	1	4	4	1	1	1	1	1	1	1	2	4	3	4	1	3	1
Norfolk loamy sand, 6 to 10 percent slopes.....	3	3	3	4	2	3	4	3	3	4	3	3	4	3	3	3	3	2	2	3	1	1	4	4	2	2	2	1	1	1	2	4	3	4	2	4	1	
Norfolk loamy sand, 6 to 10 percent slopes, eroded.....	4	3	3	4	3	4	4	4	4	4	4	4	4	4	4	4	3	2	2	3	2	2	4	4	2	2	3	2	2	1	3	4	4	4	3	4	1	
Norfolk loamy sand, thick surface, 0 to 2 percent slopes.....	2	2	2	2	2	2	3	1	2	3	2	2	3	1	2	1	2	2	2	2	2	2	4	4	2	2	2	2	1	1	2	4	2	4	2	4	2	
Norfolk loamy sand, thick surface, 2 to 6 percent slopes.....	3	3	3	2	3	3	3	1	2	3	2	2	3	1	3	1	2	2	2	3	2	2	4	4	2	2	2	2	1	1	2	4	3	4	2	4	2	
Norfolk loamy sand, thick surface, 6 to 10 percent slopes.....	4	3	4	2	2	4	4	2	3	4	3	3	4	2	4	2	3	2	2	4	2	2	4	4	2	2	2	2	2	1	2	4	4	4	2	4	2	
Okence loam.....	2	4	2	4	2	4	2	4	2	2	4	4	2	4	4	4	4	2	3	4	2	2	2	3	2	2	4	4	4	4	1	4	4	2	3	1	4	
Orangeburg loamy sand, 0 to 2 percent slopes.....	1	1	1	1	1	2	3	1	2	2	3	1	3	1	1	1	1	1	1	1	1	1	3	4	1	1	1	1	1	1	1	2	1	3	1	3	1	
Orangeburg loamy sand, 2 to 6 percent slopes.....	1	1	1	1	1	2	3	1	2	2	3	1	4	1	2	1	1	1	1	1	1	1	4	4	1	1	1	1	1	1	1	3	2	4	1	3	1	

See footnotes at end of table.

TABLE 2.—*Relative suitability of the soils in capability classes I through IV for specified crops—Continued*

[Number 1 means soil is well suited; 2 means fairly well suited; 3 means less well suited; and 4 means not suited]

Soil	Row crops					Truck crops							Small grains		Grazing crops					Orchard and vineyard crops			Crops for wild-life		Legumes													
	Corn	Cotton	Grain sorghum	Peanuts	Soybeans	Tobacco	Green beans	Cantaloups	Cucumbers	Leafy vegetables	Okra	Peppers	Potatoes and cabbage	Sweetpotatoes	Tomatoes	Watermelons	Barley	Oats	Rye	Wheat	Bahiagrass	Bermudagrass	Dallisgrass	Tall fescue	Millet ¹	Ryegrass	Grapes	Peaches	Pecans	Bicolor lespedeza	Browntop millet	Alfalfa	Crimson clover	White clover	Cowpeas	Annual lespedeza	Sericea lespedeza	
Orangeburg loamy sand, 2 to 6 percent slopes, eroded	2	1	1	2	1	3	3	2	3	3	3	2	4	3	2	2	2	1	1	2	1	1	4	4	1	1	2	1	1	1	1	1	4	3	4	1	3	1
Orangeburg loamy sand, 6 to 10 percent slopes, eroded	3	2	2	3	2	4	4	3	3	4	3	3	4	4	3	4	3	1	1	3	2	2	4	4	2	2	3	2	1	1	2	4	4	4	2	4	2	
Portsmouth loam	2	4	2	4	2	4	2	4	2	2	4	3	2	4	4	4	4	2	2	4	2	2	1	2	2	2	4	4	4	4	4	1	4	3	1	3	1	4
Portsmouth sandy loam	2	4	2	4	2	4	1	4	1	1	4	3	2	4	4	4	4	1	1	4	2	2	1	2	2	2	4	4	4	4	4	1	4	3	1	3	1	4
Rains loamy sand	3	4	3	4	3	4	3	4	3	3	3	4	3	4	4	4	4	3	3	4	2	2	2	4	3	3	4	4	4	4	4	2	4	4	2	3	2	4
Ruston loamy sand, 0 to 2 percent slopes	1	1	1	1	1	1	3	1	2	2	2	1	3	1	1	1	1	1	1	2	1	1	3	4	1	1	1	1	1	1	1	1	3	1	4	1	3	1
Ruston loamy sand, 2 to 6 percent slopes	1	1	1	1	1	1	3	2	2	3	3	2	3	1	1	1	1	1	1	2	1	1	4	4	1	1	1	1	1	1	1	1	4	2	4	1	3	1
Ruston loamy sand, 2 to 6 percent slopes, eroded	2	2	2	2	1	2	4	3	3	4	3	3	4	2	1	2	1	1	1	2	1	1	4	4	1	1	1	1	1	1	1	1	4	3	4	1	3	1
Ruston loamy sand, 6 to 10 percent slopes	3	3	3	4	2	4	4	3	3	4	3	3	4	3	3	3	3	2	2	3	1	1	4	4	2	2	2	1	1	1	2	4	3	4	2	4	1	
Ruston loamy sand, 6 to 10 percent slopes, eroded	4	3	3	4	3	4	4	4	4	4	4	4	4	4	4	4	3	2	2	3	2	2	4	4	2	2	3	2	2	1	3	4	4	4	3	4	1	
Ruston loamy sand, thick surface, 0 to 2 percent slopes	2	2	2	2	2	2	3	1	2	3	2	2	3	1	2	1	2	2	2	2	2	2	4	4	2	2	2	2	2	1	1	2	4	2	4	2	4	2
Ruston loamy sand, thick surface, 2 to 6 percent slopes	3	3	3	2	3	3	1	2	3	2	2	3	1	3	1	2	2	2	3	2	2	4	4	2	2	2	2	2	2	1	1	2	4	2	4	2	4	2
Ruston loamy sand, thick surface, 6 to 10 percent slopes	4	3	4	2	2	4	4	2	3	4	3	3	4	2	4	2	3	2	2	4	2	2	4	4	2	2	2	2	2	1	2	4	4	4	2	4	2	
Vaocluse loamy sand, 2 to 6 percent slopes	3	2	2	3	3	3	4	3	3	3	3	3	4	2	3	2	3	3	2	3	2	2	4	4	3	2	3	3	3	2	2	4	3	4	2	4	2	
Vaocluse loamy sand, 2 to 6 percent slopes, eroded	3	3	3	4	3	4	4	3	3	4	3	4	4	3	3	3	3	3	3	4	2	2	4	4	3	2	3	3	3	2	3	4	3	4	2	4	2	
Vaocluse loamy sand, 6 to 10 percent slopes	4	3	3	4	3	4	4	4	4	4	4	4	4	3	4	3	4	3	3	4	2	2	4	4	3	3	4	3	3	2	3	4	4	4	2	4	2	
Vaocluse loamy sand, 6 to 10 percent slopes, eroded	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	3	3	4	4	3	3	4	4	3	2	3	4	4	4	3	4	3	
Vaocluse loamy sand, 10 to 15 percent slopes	4	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	3	3	4	4	3	3	4	4	3	3	4	4	4	4	3	4	3	
Vaocluse loamy sand, thick surface, 2 to 6 percent slopes	3	3	3	3	3	3	4	3	4	4	4	4	4	3	3	2	4	3	3	4	2	2	4	4	3	3	3	3	3	2	2	4	4	4	2	4	2	
Vaocluse loamy sand, thick surface, 6 to 15 percent slopes	4	3	4	3	3	4	4	3	4	4	4	4	4	3	4	2	4	3	3	4	2	2	4	4	3	3	3	3	3	3	3	4	4	4	3	4	2	
Wahee fine sandy loam	2	2	2	4	2	3	2	4	2	2	2	3	3	3	3	3	3	2	2	3	2	2	2	3	2	2	4	4	3	3	2	4	3	2	2	2	3	

¹ Starr, Pearl, and German millets.² The more strongly sloping parts of this soil are not suited to cultivated crops.

Use of the Soils for Woodland²

Forests of pine and of oak, hickory, and other hardwoods covered most of Lee County before it was settled. These virgin forests provided materials first for the naval

² GEORGE E. SMITH, JR., woodland conservationist, Soil Conservation Service, assisted in the preparation of this section.

stores industry and then for the logging industry. Later on, the second-growth stands again provided materials for these industries. By the beginning of the 20th century, most of the forests in the county had been cut over, and the production of naval stores and logs had declined.

Pine and commercially valuable hardwoods are among the trees now grown for local markets. The principal

species of pine are loblolly, longleaf, and pond. Slash pine has been introduced by planting, and its growth approximates that of loblolly pine. Sweetgum, tupelo-gum, yellow-poplar, and maple are the more important hardwoods. Hardwoods grow on sites that are too wet for pine.

Soil properties affecting tree production.

Of the properties that determine the productivity of a soil for trees, its capacity to provide an optimum amount of moisture and an adequate root zone probably are the most important. These conditions are determined by the

thickness of the surface layer, the texture and consistence of each significant layer, aeration, drainage, depth to the water table, and the natural supply of plant nutrients, or fertility.

The potential productivity of a soil for trees is rated by means of the average site index. Site index is expressed as the total height, in feet, that trees of a given species, growing on a given soil, in an even-aged, well-managed stand, will attain in 50 years. Some sites are suited to hardwoods and others to pine. On some of the better hardwood sites, it is not advisable to grow pines.

TABLE 3.—*Woodland suitability groups and*

Woodland suitability group	Site index for group ¹				Important species
	Loblolly pine	Longleaf pine	Shortleaf pine	Slash pine ²	
Group 1: Nearly level to sloping, excessively drained, moderately shallow to deep, sandy soils.	78.....	65.....	65.....	78.....	Slash pine, loblolly pine, longleaf pine, shortleaf pine.
Group 2: Deep, well-drained soils that have a friable subsoil.	80.....	69.....	72.....	80.....	Loblolly pine, slash pine, longleaf pine, shortleaf pine.
Group 3: Moderately well drained soils that have a compact, fine-textured subsoil.	82.....	61.....	.....	74.....	Loblolly pine, slash pine, sweetgum, ash.
Group 4: Deep, well-drained soils that have a friable and slightly sticky subsoil.	90.....	68.....	.....	90.....	Loblolly pine, slash pine, longleaf pine, shortleaf pine.
Group 5: Deep, poorly drained soils that have a slowly permeable, plastic subsoil.	88.....	73.....	67.....	87.....	Loblolly pine, slash pine, longleaf pine, redgum, blackgum, and, in places, yellow-poplar.
Group 6: Deep, moderately well drained to poorly drained soils that have a friable subsoil.	82.....	69.....	.....	86.....	Loblolly pine, slash pine, pond pine.
Group 7: Deep, excessively drained, sandy soils very low in organic-matter content and supply of plant nutrients.	60.....	40.....	.....	60.....	Slash pine, longleaf pine.
Group 8: Poorly drained to very poorly drained soils on flood plains.	Varied to 90.	.....	.....	.....	Cypress and bottom-land hardwoods; loblolly pine and slash pine where drained.
Group 9: Poorly drained to very poorly drained soils with a high water table.	91.....	72.....	.....	90.....	Cypress, sweetgum, blackgum, pond pine; loblolly pine and yellow-poplar where drained.
Group 10: Deep, friable soils formed in local alluvium.	98.....	.....	.....	.....	Loblolly pine, slash pine, yellow-poplar on better drained areas; bottom-land hardwoods.
Group 11: Shallow to deep, sandy soils that have a compact or weakly cemented, slowly permeable subsoil.	50 to 70..	40 to 60..	.....	.....	Longleaf pine, slash pine, loblolly pine...
Group 12: Miscellaneous land types.....	Varied...	Varied...	Varied...	Varied...	Varied.....

¹ The site index is the height, in feet, that trees of a given species, growing on a given soil, in an even-aged, well-managed stand, will attain in 50 years. The figures are rounded to the nearest 10-foot site class. The site indexes are tentative and are subject to revision. They are based on field studies by the Soil Conservation Service and the South Carolina State Commission of Forestry.

² It is assumed that the growth of slash pine will be the same as that of loblolly pine on the same soils.

³ A rating of slight indicates that competition by other plants will only slightly impede the natural regeneration of the designated

species; a rating of moderate, that competition may delay but does not prevent regeneration; and a rating of severe, that natural regeneration cannot be relied upon to restock the site and that seedlings must be planted and measures taken to remove competing plants.

⁴ A rating of slight indicates that any kind of equipment commonly used in crop tending or tree harvesting can be used at any time of the year; a rating of moderate, that most types of equipment can be used and that there are periods of no more than 3 months when the use of equipment is restricted because of possible

On others, pine will give the best returns, even with the added cost of controlling competition from hardwoods.

Woodland suitability groups

To assist owners of woodlands in planning the use of their soils, the soils in the county have been placed in 12 woodland suitability groups. Each group is made up of soils that require similar conservation practices and other management practices and that are similar in potential productivity. These groups are shown in table 3. Site indexes are given for each group, and the important suit-

able trees are listed. For each group, ratings are given of the capabilities and limitations of the soils. The seriousness of a management problem is indicated by the rating *slight*, *moderate*, or *severe*. The ratings for each management problem are explained in the footnotes to the table.

Except for the site index ratings, the ratings in table 3 are based largely on the experience and judgment of local soil scientists, woodland conservationists, foresters, and landowners. They represent the best information now available, but they are tentative and subject to revision as more information becomes available.

Factors affecting woodland management

Interpretations for woodland conservation					Remarks
Plant competition ³	Equipment limitations ⁴	Seedling mortality ⁵	Windthrow hazard ⁶	Erosion hazard ⁷	
Moderate to severe.	Slight.....	Moderate to severe.	Slight.....	Slight to moderate.	Soil blowing occurs in open areas; site index is for soils in the Sand Hills.
Moderate to severe.	Slight.....	Slight to moderate.	Slight.....	Slight to moderate.	
Moderate.....	Moderate.....	Slight to moderate.	Moderate.....	Slight.....	
Moderate to severe.	Slight.....	Slight.....	Slight.....	Slight to moderate.	
Moderate to severe.	Moderate to severe.	Slight to severe....	Slight.....	Slight.....	Moderate seedling mortality on Rains soil.
Moderate to severe.	Slight to moderate.	Slight to severe....	Slight.....	Slight.....	
Moderate to severe.	Slight.....	Severe.....	Slight.....	Slight.....	
Moderate to severe.	Moderate to severe.	Severe.....	Slight.....	Slight.....	
Severe.....	Severe.....	Severe.....	Slight.....	Slight.....	Lowest site index applies to severely eroded soils.
Severe.....	Slight.....	Slight.....	Slight.....	Slight.....	
Slight to moderate.	Slight to moderate..	Slight to severe....	Moderate to severe.	Moderate to severe.	
Varied.....	Varied.....	Varied.....	Varied.....	Varied.....	

damage to soil structure and tree roots; a rating of severe, that the kinds of equipment that can be used are limited and that, for periods of 3 months or more, equipment cannot be used without danger of serious damage to the soil and to tree roots.

⁵ A rating of slight indicates that ordinarily no more than 25 percent of either planted or naturally occurring seedlings will die, and that one planting will probably produce a satisfactory stand; a rating of moderate, that losses will be between 25 and 50 percent; and a rating of severe, that more than half the seedlings will die and that replanting, special seedbed preparation, and superior planting techniques are needed for adequate restocking.

⁶ A rating of slight indicates that individual trees will withstand normal winds, even when released on all sides; moderate, that trees will remain standing unless the wind is of high velocity or the soil is excessively wet; severe, that the soil does not allow adequate rooting for stability.

⁷ Refers to potential erosion hazard when the area is managed according to current acceptable standards; ratings are based on the increasing risk of erosion.

A description of each woodland suitability group is given in the following pages. The soils in each group are listed, and information is given concerning plant competition, limitations on the use of equipment, seedling mortality, windthrow hazard, and erosion hazard, as well as other information affecting the suitability of the soils for trees. Some suggestions for woodland management are also given.

WOODLAND SUITABILITY GROUP 1

The soils in this group are nearly level to sloping, excessively drained, shallow to deep sands. They are very friable, and plant roots can penetrate to a considerable depth. They have a low content of organic matter and a low natural supply of plant nutrients. They are rapidly permeable and have a low available moisture capacity. The soils are—

Eustis sand, 0 to 6 percent slopes.
Eustis sand, shallow, 0 to 2 percent slopes.
Eustis sand, shallow, 2 to 6 percent slopes.
Eustis sand, shallow, 6 to 10 percent slopes.
Lakeland sand, 0 to 6 percent slopes.
Lakeland sand, 6 to 15 percent slopes.
Lakeland sand, shallow, 0 to 2 percent slopes.
Lakeland sand, shallow, 2 to 6 percent slopes.
Lakeland sand, shallow, 6 to 10 percent slopes.
Lakeland sand, terrace, 0 to 6 percent slopes.

On the shallow sands, plant competition is moderate; thus, natural regeneration of trees is delayed and initial growth is slowed. Special site preparation is not needed, but light preparation of the seedbed will help to obtain adequate restocking of desirable trees. Loss of seedlings is between 25 percent and 50 percent, and some replanting ordinarily is needed to fill in the openings.

On the deeper sands, plant competition is severe and prevents adequate restocking of desirable trees. Prescribed burning, applying chemicals, girdling, clearing, and replanting are needed. Natural regeneration cannot be depended on for adequate restocking, and losses of planted stock are generally more than 50 percent. Special preparation of the seedbed and superior planting techniques are needed, as well as much replanting.

The use of equipment is not restricted on any of the soils in this group. The hazard of windthrow is slight. Individual trees can be expected to remain standing if exposed to normal winds.

The hazard of erosion is slight on the level and nearly level soils and moderate on the gently sloping and sloping soils. Building of roads, clearing for firebreaks, plowing furrows, and other operations that disturb the ground cover should be done on the contour. Large open fields are likely to be eroded by wind. They require a protective cover before being seeded or planted to trees.

The Nantucket pine-tip moth sometimes causes severe damage to pine on these soils, particularly to loblolly pine.

WOODLAND SUITABILITY GROUP 2

The soils in this group are deep and well drained and have a friable subsoil. They occur on both uplands and stream terraces. They are moderately permeable and have a low to moderate available moisture capacity. They have a low to moderate content of organic matter and a low to moderate natural supply of plant nutrients. The soils are—

Cahaba sandy loam.
Gilead loamy sand, 0 to 2 percent slopes.
Gilead loamy sand, 2 to 6 percent slopes.
Gilead loamy sand, 2 to 6 percent slopes, eroded.
Gilead loamy sand, 6 to 10 percent slopes.
Gilead loamy sand, 6 to 10 percent slopes, eroded.
Gilead loamy sand, 10 to 15 percent slopes.
Gilead loamy sand, 10 to 15 percent slopes, eroded.
Gilead loamy sand, thick surface, 2 to 6 percent slopes.
Gilead loamy sand, thick surface, 6 to 10 percent slopes.
Kalmia loamy sand.
Kalmia loamy sand, thick surface.
Norfolk loamy fine sand, 0 to 2 percent slopes.
Norfolk loamy sand, 0 to 2 percent slopes.
Norfolk loamy sand, 2 to 6 percent slopes.
Norfolk loamy sand, 2 to 6 percent slopes, eroded.
Norfolk loamy sand, 6 to 10 percent slopes.
Norfolk loamy sand, 6 to 10 percent slopes, eroded.
Norfolk loamy sand, thick surface, 0 to 2 percent slopes.
Norfolk loamy sand, thick surface, 2 to 6 percent slopes.
Norfolk loamy sand, thick surface, 6 to 10 percent slopes.
Orangeburg loamy sand, 0 to 2 percent slopes.
Orangeburg loamy sand, 2 to 6 percent slopes.
Orangeburg loamy sand, 2 to 6 percent slopes, eroded.
Orangeburg loamy sand, 6 to 10 percent slopes, eroded.
Ruston loamy sand, 0 to 2 percent slopes.
Ruston loamy sand, 2 to 6 percent slopes.
Ruston loamy sand, 2 to 6 percent slopes, eroded.
Ruston loamy sand, 6 to 10 percent slopes.
Ruston loamy sand, 6 to 10 percent slopes, eroded.
Ruston loamy sand, thick surface, 0 to 2 percent slopes.
Ruston loamy sand, thick surface, 2 to 6 percent slopes.
Ruston loamy sand, thick surface, 6 to 10 percent slopes.

The use of equipment is not restricted on any of these soils. The loss of trees from windthrow is slight, and individual trees can be expected to remain standing when released on all sides.

The thick surface phases of Gilead, Norfolk, and Ruston soils have a lower available moisture capacity than the other soils. On these droughty soils, therefore, plant competition is severe and prevents adequate restocking of desirable trees. Prescribed burning, applying chemicals, girdling, clearing, and replanting are needed.

On the other soils, plant competition is moderate. Natural regeneration of trees is delayed and initial growth is slowed, but special site preparation is not needed. The sloping and eroded phases of these soils are somewhat droughty, and some of these soils have a compact subsoil through which water moves slowly. Consequently, when trees are planted, seedling mortality ranges from 25 to 50 percent. Replanting is needed to fill in the openings.

The hazard of erosion is slight on the level or nearly level soils and moderate on the sloping soils and eroded phases. On the sloping soils, tillage and other operations that disturb the ground cover should follow the contour of the land. Open fields are likely to be eroded by wind. They need a protective cover before being planted or seeded to trees.

Trees have only moderate vigor on the droughty soils. Some species of pine are damaged by forest pests, particularly the Nantucket pine-tip moth.

WOODLAND SUITABILITY GROUP 3

Wahee fine sandy loam is the only soil in this suitability group. It is level and moderately well drained. The surface layer is thin, and the subsoil is compact and fine textured. Consequently, the infiltration rate is slow, and permeability is slow. The content of organic matter is

moderate, and the natural supply of plant nutrients is moderate. The available moisture capacity is moderate.

This soil puddles and packs easily when wet. Consequently, the use of equipment should be avoided in wet weather. Generally, the seasonal restriction on the use of equipment is for less than 3 months. In some places, however, it is difficult to use certain types of equipment during periods of drought.

Generally, natural regeneration of trees is adequate. Plant competition delays natural regeneration and slows the initial growth of trees, but special site preparation is not needed. Light preparation of the seedbed will help to obtain adequate stands of desirable species. In years of low rainfall, however, natural regeneration will not give adequate restocking, and some planting is needed.

In years of normal rainfall, the loss of planted trees is less than 25 percent and satisfactory restocking is obtained from the first planting. In years of low rainfall, losses of planted stock range from 25 to 50 percent and some replanting is needed to fill in the openings.

Because this soil has a thin surface layer and a compact subsoil, windthrow is a moderate hazard, especially in wet seasons and during exceptionally strong winds. The hazard of erosion is slight.

WOODLAND SUITABILITY GROUP 4

The soils in this suitability group are deep and well drained. They have a surface layer that is 6 to 12 inches thick, and their subsoil is friable and slightly sticky. The infiltration rate and permeability are both moderate. The available moisture capacity is moderate. The content of organic matter and the natural supply of plant nutrients are moderate. The soils are—

Faceville loamy sand, 0 to 2 percent slopes.
Faceville loamy sand, 2 to 6 percent slopes.
Faceville loamy sand, 2 to 6 percent slopes, eroded.
Faceville loamy sand, 6 to 10 percent slopes, eroded.
Magnolia loamy sand, 0 to 2 percent slopes.
Magnolia loamy sand, 2 to 6 percent slopes, eroded.
Marlboro loamy sand, 0 to 2 percent slopes.
Marlboro loamy sand, 2 to 6 percent slopes.
Marlboro loamy sand, 2 to 6 percent slopes, eroded.
Marlboro loamy sand, 6 to 10 percent slopes, eroded.

On the eroded soils in this group, severe plant competition prevents adequate restocking of desirable trees. Prescribed burning, applying chemicals, girdling, clearing, and replanting are needed. On the other soils in the group, plant competition is moderate; consequently, natural regeneration of trees is delayed and initial growth is slowed. Although special site preparation is not needed, light preparation of the seedbed will help to obtain adequate restocking of desirable trees.

The use of equipment is not restricted on any of the soils in this group. Except just after heavy rains, work can be done in the woodlands at any time of the year.

Satisfactory restocking on these soils is generally obtained from the first planting. The loss of seedlings is slight, or less than 25 percent. If adequate sources of seed are available, a satisfactory stand of trees is obtained through natural regeneration.

Windthrow is not a serious hazard. Individual trees can be expected to remain standing when released on all sides. Cutting can be done without danger of future losses by windthrow except from abnormally high winds.

On the sloping eroded soils of this group, the hazard of erosion is moderate. To minimize the erosion hazard, follow the contour when plowing or when building roads. Operations that remove the natural cover should be avoided.

WOODLAND SUITABILITY GROUP 5

The soils in this suitability group are deep, level, and poorly drained. They have a tough, plastic subsoil through which water moves slowly. They occur in the Carolina bays, on stream terraces, and on large, flat upland areas. Their available moisture capacity is moderate to high, and permeability is moderately slow to slow. Their content of organic matter is moderate, and their natural supply of plant nutrients is moderate. The soils are—

Coxville loam.
Coxville sandy loam.
Grady loam.
Grady sandy loam.
Leaf fine sandy loam.

Longleaf pine, loblolly pine, pond pine, maple, hickory, red oak, poplar, and sweetgum grow on the upland areas. In the deeper depressions water stands throughout the year, and cypress, tupelo-gum, blackgum, and pond pine grow here. Leaf fine sandy loam is on stream terraces and is suited to water oak, white oak, red oak, hickory, sweetgum, poplar, and loblolly pine.

On the wetter areas, plant competition is moderate. It does not prevent moisture-tolerant species from becoming established, but it delays natural regeneration of trees and slows the initial growth. On the large upland flats and on the terraces, plant competition is severe. Natural regeneration will not provide adequate restocking of desirable species on these soils. Prescribed burning, applying chemicals, girdling, clearing, disking, drainage, or other special practices are needed to prepare sites for planting.

Where water stands on or near the surface for most of the year, the use of equipment is severely restricted. Drainage and water management are needed before the sites can be utilized fully. Outlets are not always available, and the cost of constructing a suitable outlet may be high. The use of equipment is severely limited also on the soils that puddle and pack when wet.

If drainage is adequate, seedling mortality is slight and satisfactory restocking generally is obtained from the first planting. If the sources of seed are adequate, a satisfactory stand of trees is obtained through natural regeneration. If drainage is inadequate, generally more than 50 percent of the seedlings are lost and natural regeneration cannot be relied on. Drainage and water management are needed to get adequate restocking of some species, even if rainfall is normal.

The hazard of windthrow is slight. Few trees are lost, and individual trees can be expected to remain standing when released on all sides. Cutting can be done without danger of future losses by windthrow except from abnormally high winds.

WOODLAND SUITABILITY GROUP 6

The soils in this suitability group are deep, nearly level, and moderately well drained to poorly drained. They have a friable subsoil. The infiltration rate is moderate, and permeability is moderate. Their available

moisture capacity is moderate. The content of organic matter is moderate. These soils occur on uplands and stream terraces. The soils are—

Dunbar sandy loam.
Goldsboro loamy sand.
Izagara sandy loam.
Lynchburg sandy loam.
Rains loamy sand.

Cypress, blackgum, tupelo-gum, sweetgum, and maple are the trees best suited to the poorly drained soils. Plant competition on these soils is moderate; it delays natural regeneration and slows initial growth, but it does not prevent adequate restocking by natural regeneration. Loblolly pine, longleaf pine, red oak, white oak, yellow-poplar, and dogwood are the trees best suited to the moderately well drained soils. Plant competition is severe on these soils, and natural regeneration does not provide adequate restocking of desirable species. Some planting is needed. Prescribed burning, applying chemicals, girdling, clearing, disking, and other special management measures are necessary to prepare sites before planting.

The use of logging equipment on the poorly drained soils is restricted in wet weather. If feasible, large areas should be drained and water management practiced.

Seedling mortality on the poorly drained sites generally is more than 50 percent of the planted stock. Special preparation of the seedbed is necessary, and superior planting techniques are needed. Much replanting is necessary. Both drainage and water management are required to establish pine seedlings.

The risk of windthrow is slight on these soils. Individual trees can be expected to remain standing when released on all sides. Cutting can be done without danger of future losses by windthrow except from abnormally high winds.

WOODLAND SUITABILITY GROUP 7

Only one soil, Lakewood sand, 0 to 10 percent slopes, is in this suitability group. This soil is deep and excessively drained. At a depth of between 12 and 24 inches, there is a thin organic pan, but the content of organic matter in the soil is very low. The natural supply of plant nutrients is very low. Permeability is very rapid, and the available moisture capacity is very low.

Because of the limited supply of moisture in this soil, plant competition is severe. Natural regeneration cannot be relied on to adequately restock the forest with desirable trees, and some planting is needed. Prescribed burning, applying chemicals, girdling, clearing, disking, and other special management practices are needed before planting.

Seedling mortality is rated as severe; generally, more than 50 percent of the planted stock is lost. Special seedbed preparation, superior planting techniques, and much replanting are required to ensure adequate restocking.

Except just after heavy rains, work can be done in the woods at any time in the year. The use of certain kinds of equipment, however, is limited by the loose sandy texture of the soil.

The risk of windthrow is slight. Individual trees can be expected to remain standing when released on all sides. Cutting can be done with the expectation that only abnormally high winds will cause losses by windthrow.

WOODLAND SUITABILITY GROUP 8

This suitability group consists of poorly drained to very poorly drained soils and land types on flood plains. Water stands on or near the surface most of the year. The content of organic matter generally is high, and the natural supply of plant nutrients is low. The two land types are of varied texture. The mapping units in this group are—

Mixed alluvial land.
Swamp.
Wehadkee silt loam.

The trees best suited to the very poorly drained sites are cypress, tupelo-gum, blackgum, juniper, and water-tolerant oaks. Maple, sweetgum, poplar, and a few scattered pines grow on most of the other sites.

Plant competition ranges from moderate to severe. Where it is moderate, it delays natural regeneration and slows the initial growth of trees but does not prevent an adequate stand from becoming established. In such places light seedbed preparation will help to obtain adequate restocking. Where plant competition is severe, special methods of site preparation may be needed, including drainage and water management, prescribed burning, applying chemicals, clearing, and disking.

The use of equipment is severely restricted by wetness, and drainage and water management are needed. Roads require adequate drainage.

Seedling mortality is severe unless the soils are drained. Generally, more than 50 percent of the seedlings planted are lost, and natural regeneration of desirable species cannot be relied on.

The hazard of erosion is slight, as is the hazard of windthrow. Cutting can be done without danger of losses by windthrow, except from abnormally high winds.

WOODLAND SUITABILITY GROUP 9

The soils in this suitability group are deep, friable, and poorly drained to very poorly drained. The water table is high. Some of the soils are in the Carolina bays and lack adequate drainage outlets. The soils are—

Myatt sandy loam.
Okenee loam.
Plummer loamy sand.
Plummer sand, terrace.
Portsmouth loam.
Portsmouth sandy loam.
Rutlege loamy sand.

The content of organic matter in Plummer and Myatt soils is low, whereas the content of organic matter in Portsmouth, Okenee, and Rutlege soils is high. The natural supply of plant nutrients is low to moderate. Permeability is moderate to rapid.

Plant competition is severe on these soils. Natural regeneration will not provide adequate restocking of desirable trees, and some planting is needed. Prescribed burning, use of chemical sprays, girdling, clearing, disking, and other special practices are needed to prepare the sites for planting.

Since water stands on or near the surface of these soils most of the year, the use of equipment is severely limited. In some places controlled drainage is needed before a site can be utilized fully. Outlets are not always available, however, and the cost of constructing suitable outlets is high. In some of the soils in this group, the subsoil is

friable and the sides of drainage ditches are likely to cave in.

Generally, more than 50 percent of planted seedlings die. Natural regeneration cannot be relied on for adequate restocking. Controlled drainage is needed to get adequate stocking of some species, even if rainfall is no more than normal.

The hazard of windthrow is slight. Few trees are lost, and individual trees can be expected to remain standing when released on all sides. Cutting can be done without danger of future losses by windthrow, except from abnormally high winds.

WOODLAND SUITABILITY GROUP 10

This suitability group consists of the miscellaneous land type, Local alluvial land, which consists of young alluvium and some colluvial material. It is moderately well drained to somewhat poorly drained and occurs in depressions and at the head of some drainageways in the uplands. The soil material varies widely in both texture and permeability. The natural supply of plant nutrients is high, and the content of organic matter is moderate.

Plant competition is severe. Burning, applying chemical sprays, clearing, and special methods of seedbed preparation are needed to ensure restocking with desirable species. Drainage and water management generally are necessary also.

In most places machinery can be used at least 9 months of the year without serious damage to the soil. Access roads need to be adequately drained. In some places the use of equipment is limited to shorter periods, and drainage and water management are needed.

Generally, seedling mortality is slight, and the loss of planted stock is less than 25 percent. In some places, however, seedling mortality is severe unless drainage is controlled.

The hazard of windthrow is slight. Individual trees can be expected to remain standing when released on all sides. Consequently, cutting can be done without danger of future losses by windthrow, except from abnormally high winds.

WOODLAND SUITABILITY GROUP 11

The soils in this suitability group are shallow to deep and gently sloping to moderately steep. They are well drained but have a compact or weakly cemented subsoil through which water moves slowly. The water-holding capacity is low, especially in the thick surface phases. The content of organic matter is low, and the natural supply of plant nutrients is low. In some places the growth of tree roots is restricted by the compact subsoil. The soils are—

- Vaughan loamy sand, 2 to 6 percent slopes.
- Vaughan loamy sand, 2 to 6 percent slopes, eroded.
- Vaughan loamy sand, 6 to 10 percent slopes.
- Vaughan loamy sand, 6 to 10 percent slopes, eroded.
- Vaughan loamy sand, 10 to 15 percent slopes.
- Vaughan loamy sand, 10 to 15 percent slopes, eroded.
- Vaughan loamy sand, 15 to 25 percent slopes, eroded.
- Vaughan loamy sand, thick surface, 2 to 6 percent slopes.
- Vaughan loamy sand, thick surface, 6 to 15 percent slopes.
- Vaughan sandy loam, 6 to 10 percent slopes, severely eroded.

Plant competition does not prevent desirable species from becoming established on these soils, but it delays

natural regeneration and slows initial growth. If the sources of seed are adequate, light seedbed preparation will help to obtain adequate stands.

The limitation on the use of equipment ranges from slight on the gently sloping soils to moderate on the other soils. On the severely eroded soils, the use of equipment may be restricted by wetness, but generally for periods of less than 3 months.

Where most of the original surface soil remains, seedling mortality is slight. On the eroded and severely eroded soils, however, seedling mortality is severe, and generally more than 50 percent of the planted stock is lost. Special seedbed preparation and superior planting techniques are needed. Mulching may be required. Much replanting generally is necessary. Tree growth is hindered by the shortage of available water in these soils.

The hazard of windthrow is moderate to severe. Most trees do not develop root systems adequate for stability, and windthrow is likely if individual trees are released on all sides. Even in well-stocked natural stands, high winds frequently cause windthrow.

Many of these soils are eroded or severely eroded. Wherever possible, road building, clearing for firebreaks, and any other operations that disturb the natural protective cover should be avoided.

WOODLAND SUITABILITY GROUP 12

This suitability group consists of two miscellaneous land types—Borrow pits and Gullied land. They are highly variable in their characteristics and in their limitations and capacity for producing trees. The site indexes and potential yields range from low to high. Plant competition, limitation on the use of equipment, seedling mortality, hazard of windthrow, and the hazard of erosion range from slight to severe.

Woodland protection

If high yields are to be obtained from woodland, trees must be protected from fire, insects, and disease; grazing must be limited; and erosion controlled.

Protection from fire.—The development of a fire-protection system is influenced to a large extent by natural barriers and physiographic features. The spacing and location of firebreaks depend on the location of roads, sloughs, swamps, and drainageways, and on slope and erosion. The ease or difficulty of operating equipment on the particular soils influences the type of firefighting equipment to be selected.

Protection from overgrazing.—Overgrazing is injurious to any kind of forest. If the soil is trampled and packed, rain runs off quickly and tree roots are deprived of water and air. If the soil is trampled when wet, it becomes hard when dry. Heavy grazing destroys soil structure and eventually lowers the quality of the site. Damage is most likely to occur on the finer textured soils, on soils that have a plastic subsoil, and on eroded soils.

If properly managed, pine woodlands can be grazed without serious damage. Continuous heavy grazing, however, should be avoided.

Protection from water erosion and wind erosion.—Loss of soil by erosion reduces productivity and lowers site quality. In eroded areas, any disturbance of the site may

lead to further erosion. Where erosion is a serious problem, it is important that litter be disturbed as little as possible, even during logging operations. Roads and skid trails should be so located that they will not encourage further erosion. Soils that are severely eroded should not be grazed.

Light erosion may be favorable for the reproduction of pines because it discourages the growth of competing vegetation. Even severe erosion may injure only the seedlings. Where the subsoil is exposed, natural regeneration may not be adequate and replanting will be required.

Wind erosion is a serious hazard on the coarse-textured soils of the middle and upper parts of the Coastal Plain. To prevent soil blowing, windbreaks of native pine should have an understory of redcedar, cherry-laurel, ligustrum, or other species suited to these soils. In some places it is advisable to establish a protective cover before pine seedlings are planted. Soils dried by sun and wind in areas where there has been heavy cutting may be susceptible to wind erosion. A border of low trees or shrubs around the edge of the forest helps to reduce wind velocity.

Protection from diseases and insects.—Damage to trees by insects and diseases generally is more severe in areas where the characteristics of the soils are not favorable for tree growth. Such soils generally have a shallow root zone and unfavorable moisture conditions.

Spot die-out is a relatively new disease of young loblolly pine. The cause has not been determined. Mortality appears greatest in trees on very poorly drained soils that have little or no surface soil.

Dieback of sweetgum may be related to soil conditions. Reports indicate that insufficient soil moisture is one of the prime causes for the recent decline of sweetgum stands.

Soil conditions also may be important factors in root rot (*Fomes annosus*). Until recently this disease has been known in the Southeast only as a killer of redcedar. Windthrow and the outright killing of slash pine by root rot in Georgia and South Carolina are now causing concern. Some planted stands of slash pine on fine-textured soils have been infected by the root-rot fungus.

Longleaf pine seedlings are highly susceptible to brown-spot needle blight (*Scirrhia acicola*). This disease also affects slash pine and may cause needle browning on loblolly pine.

Seedlings on very sandy soils, particularly soils previously used for agricultural crops, may become infected with nematodes. Knots form on the roots, and tree growth is checked. Trees soon have an unhealthy appearance, and mortality is high.

Injury by the Nantucket pine-tip moth (*Rhyacionia frustrana*) is greatest on loblolly pine and shortleaf pine growing in abandoned fields, especially if the soils are not well suited to these trees. Slash pine is less susceptible to attack by the tip moth and has been planted successfully on the coarse-textured soils of the middle and upper parts of the Coastal Plain.

Pine that has been weakened by fire, drought, overmaturity, lightning, wind, or generally poor growing conditions is particularly susceptible to injury by the pine engraver beetle (*Ips* sp.), the black turpentine beetle

(*Dendroctonus terebrans*), and the southern pine beetle (*Dendroctonus frontalis*).

Water management in woodlands

Tree seedlings cannot survive if they are submerged and scalded during hot weather. This may happen if drainage is poor. A good drainage system keeps water moving so that seedlings are not damaged. Water-control gates permit the discharge of excess surface water and help to maintain the water level that is needed for plant growth.

In areas that have been drained there is a marked improvement in the growth of certain species of pine (5).³ Other benefits of drainage include better access to sites, improved logging conditions, and improved habitats for wildlife.

Not all wet woodlands need drainage. On bottom lands, a good hardwood-cypress forest that contains large sawtimber and veneer logs of gum, ash, cottonwood, and cypress probably will yield greater returns than pine on similar sites that are drained.

Shallow water impoundments have been built in recent years to attract migrating waterfowl. These impoundments are made by constructing low dikes and dams in flats or sloughs. The impoundment of water increases the amount of water that is stored in the soil. This extra moisture is especially beneficial to trees during dry periods in summer, but it can cause damage to trees unless it is drained promptly each spring.

Woodland production and yields

Table 4, based on published research (8), shows how site index ratings can be converted readily to obtain probable yields expressed as cords, as cubic feet, or as board feet. This table can be used as a guide until information on managed stands is available.

Management of the Soils for Wildlife⁴

The suitability of the soils as wildlife habitats is discussed in the following pages by soil associations (see colored general soil map in the back of this report). Suggestions are made for the development and maintenance of cover and food for desirable kinds of wildlife. More complete descriptions of the soil associations are given in the section "General Soil Map."

1. Faceville-Marlboro-Grady association

Most of the acreage in this soil association is cultivated. Cotton, corn, small grains, and soybeans are the principal crops on the broad upland ridges. The areas are not densely populated, and the farms are large. Although most of the acreage is open, the wet soils in the oval-shaped depressions and on the flood plains of the small streams are in woods. Most of the cover now available for wildlife is in these wooded areas, on ditchbanks that have grown up in brush, and in the few windbreaks in the area.

³ Italic numbers in parentheses refer to Literature Cited, p. 84.

⁴ W. W. NEELY, biologist, Soil Conservation Service, assisted in the preparation of this section.

TABLE 4.—*Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines*

[Statistics in this table are compiled from United States Department of Agriculture Miscellaneous Publication No. 50 (8)]

LOBLOLLY PINE

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	Cu. ft.	Cords	Bd. ft. (Scribner)	Feet	Inches	Sq. ft.	Number
60-----	20	1,500	12	-----	32	3.6	121	1,600
	30	2,750	25	1,250	45	5.4	138	850
	40	3,700	35	4,500	54	6.8	147	585
	50	4,300	41	8,550	60	7.9	152	440
	60	4,700	46	12,250	64	8.9	156	360
	70	5,000	49	15,250	67	9.7	158	310
	80	5,200	51	17,550	69	10.4	160	275
70-----	20	1,900	17	100	38	4.3	125	1,185
	30	3,350	31	3,500	52	6.5	143	640
	40	4,500	42	9,400	63	8.1	151	435
	50	5,200	50	15,200	70	9.4	157	325
	60	5,700	55	19,600	75	10.6	160	270
	70	6,000	59	22,550	78	11.5	163	230
	80	6,200	62	24,600	80	12.3	165	205
80-----	20	2,350	22	700	43	5.0	129	950
	30	4,000	38	6,500	59	7.4	147	510
	40	5,300	51	14,800	72	9.2	156	345
	50	6,150	60	21,700	80	10.7	162	255
	60	6,650	66	26,400	85	12.0	165	210
	70	7,000	70	29,500	89	13.1	168	185
	80	7,300	73	31,550	92	14.0	170	160
90-----	20	2,850	27	1,000	48	5.6	133	790
	30	4,700	46	10,700	67	8.2	152	420
	40	6,200	61	20,550	81	10.2	162	290
	50	7,200	71	28,250	90	12.0	167	220
	60	7,800	78	33,100	96	13.4	171	180
	70	8,200	82	36,600	100	14.6	174	150
	80	8,550	85	39,100	103	15.6	176	135
100--	20	3,300	32	2,750	54	6.1	138	690
	30	5,400	53	14,800	74	9.0	158	375
	40	7,150	71	26,700	90	11.2	168	255
	50	8,400	84	35,050	100	13.1	174	190
	60	9,150	92	41,000	107	14.6	178	155
	70	9,600	96	44,750	112	15.9	181	135
	80	9,950	100	47,400	115	17.1	182	115

LONGLEAF PINE

50-----	20	500	4	-----	26	2.8	64	1,410
	30	1,150	11	200	37	4.1	78	900
	40	1,700	17	900	45	5.1	88	625
	50	2,150	21	2,100	50	5.9	95	505
	60	2,550	25	3,700	55	6.6	100	430
	70	2,850	28	5,400	58	7.2	104	375
	80	3,150	31	7,250	61	7.8	106	335
60-----	20	1,000	8	50	31	3.3	79	1,290
	30	1,900	19	900	44	4.9	97	815
	40	2,750	27	2,800	53	6.0	108	575
	50	3,450	34	5,900	60	7.0	118	465
	60	4,000	40	9,300	65	7.8	124	395
	70	4,500	45	12,350	70	8.5	128	345
	80	4,900	49	15,000	73	9.1	131	305
70-----	20	1,500	14	200	36	3.8	92	1,150
	30	2,700	28	2,000	52	5.5	113	730
	40	3,800	39	6,100	62	6.8	127	515
	50	4,750	48	11,400	70	7.9	138	415
	60	5,600	55	16,400	77	8.8	145	355
	70	6,200	62	20,400	82	9.6	150	305
	80	6,800	67	23,700	86	10.3	153	270

TABLE 4.—Stand and yield information per acre for well-stocked, unmanaged, normally growing loblolly, longleaf, shortleaf, and slash pines—Continued

Site index	Age	Total merchantable volume			Total height of average dominant trees	Average diameter at breast height	Basal area at breast height	Trees
	Year	Cu. ft.	Cords	Bd. ft. (Scribner)	Feet	Inches	Sq. ft.	Number
80-----	20	2,050	20	550	41	4.3	102	1,050
	30	3,500	36	3,800	59	6.1	124	655
	40	4,900	49	10,800	71	7.6	140	465
	50	6,000	61	17,600	80	8.8	152	375
	60	7,000	70	23,500	87	9.8	160	315
	70	7,850	78	28,300	93	10.6	166	270
	80	8,550	85	32,100	98	11.5	169	240
SHORTLEAF PINE								
50-----	20				25	2.5	139	3,425
	30	2,040	23	50	35	3.9	158	1,855
	40	2,980	33	1,450	44	5.1	162	1,085
	50	3,970	43	4,400	50	6.1	162	760
	60	4,430	48	8,150	55	6.9	162	590
	70	4,780	51	11,600	59	7.6	162	485
	80	5,050	53	14,400	62	8.3	162	420
60-----	20	1,060	12		30	2.9	142	2,520
	30	2,880	32	750	32	4.6	162	1,370
	40	4,200	46	4,400	52	6.0	166	815
	50	5,080	54	10,600	60	7.2	166	570
	60	5,690	60	15,850	66	8.2	166	445
	70	6,170	65	19,700	71	9.0	166	370
	80	6,520	68	22,600	74	9.8	166	315
70-----	20	1,600	18		34	3.5	145	1,965
	30	3,720	41	2,400	49	5.4	165	1,060
	40	5,210	56	9,900	61	7.0	169	625
	50	6,250	66	17,850	70	8.3	169	440
	60	7,000	73	23,450	77	9.4	169	345
	70	7,580	79	27,550	82	10.4	169	285
	80	8,020	83	30,700	86	11.2	169	240
80-----	20	2,190	25	200	39	4.1	147	1,495
	30	4,420	48	5,200	56	6.2	167	815
	40	6,100	65	16,200	70	8.0	171	485
	50	7,380	77	24,900	80	9.5	171	335
	60	8,250	85	30,900	88	10.8	171	260
	70	8,920	92	35,200	94	11.9	171	215
	80	9,460	97	38,550	99	12.9	171	185
SLASH PINE								
60-----	20	1,850	20		36	3.5	143	2,035
	30	3,150	32	1,050	48	5.0	152	1,140
	40	4,050	40	4,100	55	6.3	155	710
	50	4,750	45	7,500	60	7.2	157	550
	60	4,900	48	10,500	64	7.9	158	470
70-----	20	2,750	28		42	4.2	146	1,445
	30	4,000	40	3,500	56	6.0	156	820
	40	4,850	49	9,300	64	7.5	159	500
	50	5,850	55	14,250	70	8.6	161	390
	60	6,050	59	17,400	74	9.4	162	335
80-----	20	3,400	35	900	48	4.9	148	1,090
	30	4,850	48	7,300	63	7.0	158	610
	40	5,850	58	15,150	73	8.7	161	380
	50	6,900	65	20,350	80	10.0	163	295
	60	7,150	69	23,600	85	10.8	164	250
90-----	20	4,050	41	2,750	54	5.6	149	835
	30	5,550	54	12,300	71	8.0	159	470
	40	6,650	66	20,600	83	10.0	163	295
	50	7,850	73	25,900	90	11.4	165	220
	60	8,100	78	29,600	95	12.5	166	195

Bobwhite quail, doves, and rabbits are the game best suited to this association. Under present conditions, however, quail are not numerous because there is so little suitable cover. Crop wastes left in the harvest of corn and soybeans contribute to the food supply, but most of the cropfields are too far from cover to be used as feeding grounds by quail. Seeds of annual lespedezas and native plants furnish additional food but, generally, not enough to support a large quail population.

Practices that will improve the areas as a habitat for quail are (1) planting shrub lespedeza (*Lespedeza bicolor*) in strips or patches, one-eighth of an acre in size, near cover, to furnish a dependable source of food; (2) leaving unplowed the parts of fields that adjoin cover; and (3) planting strips or patches of annuals, such as browntop millet, near cover.

This association supplies good fall and winter habitats for doves. Corn and soybean wastes left in harvesting supply a considerable amount of food, and the scattered woodlands furnish suitable cover for resting and roosting. Fields that are to be managed specifically for doves may be planted to browntop millet. For this purpose, the millet should be planted in rows rather than broadcast or drilled. Since it matures quickly, browntop millet can be planted after a small grain crop has been harvested.

The rabbit population, like that of quail, is limited by the lack of suitable cover. Food for rabbits is plentiful, and the hunting pressure is not heavy. The number of rabbits probably will increase if patches of thorny cover are left along ditchbanks and in odd corners of fields.

2. Norfolk-Dunbar-Coxville association

About 65 percent of the acreage in this association is cultivated. The farms are large and of the general type. The rest of the acreage is in woods, which are well scattered throughout the area. The woods on the poorly drained uplands are mostly stands of pine and hardwoods, and those on the flood plains of the small streams are predominantly stands of hardwoods. The area is fairly well populated but not densely enough to limit game wildlife on farms.

The flood plains of the small streams are fairly well suited to squirrels, but the food supply is limited. Farm ponds and low places that are naturally flooded in winter attract wild ducks, but the food supply is very limited.

Duck fields provide recreation, and the sale of shooting privileges is a source of farm income (4). A few places in this association can be developed for ducks. Fields that can be diked and flooded to a depth of 6 to 12 inches in fall and winter are needed. Water must be controlled, however, so that the fields are dry enough in summer to be plowed or disked and planted to crops, such as browntop millet, for food. On suitable soils, corn and browntop millet can be grown together. Japanese millet is better suited to poorly drained areas. There are some good locations for duck fields below farm ponds, since the ponds can be used as a source of water for flooding the fields in fall. Other sources of water are wells and excavated irrigation pits from which water can be pumped. Ordinary runoff cannot be depended on as a source of water, particularly in fall, when the weather is commonly dry.

The quail population in this area is large, but the hunting pressure is heavy. Wastes left after corn and soybeans are harvested furnish a considerable amount of

food. Less important sources are cowpeas, annual lespedezas, and native plants. Practices that will help to improve habitats for quail are (1) planting strips or patches of bicolor lespedeza, one-eighth of an acre in size, near adequate cover; (2) controlled burning of woodlands, which will encourage the growth of food plants, such as partridge-pea and wild perennial lespedezas, and at the same time reduce the number of scrubby hardwoods that make cover too thick for quail and for hunting; (3) planting annual foods, such as cowpeas or browntop millet, in patches $\frac{1}{4}$ acre to 1 acre in size and spaced so that there is one planting for every 25 acres.

The intensive general farming in this area makes it well suited to doves. Cornfields that are "hogged down" or grazed by other livestock are very attractive to doves. The harvest residues in fields of corn and soybeans furnish large amounts of food. The scattered woodlands provide suitable cover. Fields that are to be managed specifically for doves can be planted to rows of browntop millet. On the better crop soils, plantings of sesame (benne) will provide attractive food.

Rabbits generally are plentiful in this area, although predators and disease cause periodic fluctuations in the population. The hunting pressure is not heavy. Blackberries or other thorny cover in odd areas and on ditchbanks provide desirable habitats.

3. Norfolk-Ruston-Grady association

This soil association consists of well-drained soils that are mostly cultivated and many oval-shaped depressions, or "bays," of poorly drained soils that are mostly in woods. Cover for wildlife is fairly well distributed, since about 20 percent of the acreage is in woods.

Lack of food limits the number of quail, doves, rabbits, and squirrels in this area. Acorns from scrub oak trees are eaten by quail, but the acorn crop is not reliable and in some years few or no acorns are produced. The dove population varies with the kind of farming practices used. In some places there are almost no doves; in other places, where corn and soybeans are harvested by combines or grazed by livestock, doves are numerous.

The planting and management practices suggested for soil association 2 are applicable to this association.

4. Izagora-Wahee-Myatt association

This association of soils on stream terraces contains suitable habitats for deer. Food and cover are sufficient to carry a herd much larger than the present herd. This herd is increasing rapidly, however, and plantings of tall fescue, rescuegrass, ryegrass, or whiteclover, 1 to 10 acres in size, may be desirable as additional sources of food.

The wetter soils in this association are not suited to quail. In the better drained areas, however, strips or patches of bicolor lespedeza, one-eighth of an acre in size, may be planted as a dependable source of food. Annuals, such as cowpeas, browntop millet, and annual lespedezas, are suited to many of the soils. Plantings can be $\frac{1}{4}$ acre to 1 acre in size and can be spaced at the rate of one planting for every 25 acres. The common practice of fall plowing removes most of the crop residues that would otherwise contribute to the supply of food for quail.

There are some desirable sites that can be developed as duck fields. Nearly level fields can be diked and planted

to corn and browntop millet. In fall, after the crops mature, the fields can be flooded by pumping water from excavated ponds.

As in soil association 3, the dove population varies with the kind of farming practices used. In some places there are almost no doves, but in other places, where corn and soybeans are harvested by combines or grazed by livestock, doves are numerous.

Many ponds have been excavated in this area as a source of irrigation water, and the practice is likely to continue. Many of these ponds, one-third of an acre or more in size, are suitable for fish production. Some of the ponds, however, have been dug through a stratum that contains sulfides. If this material is left on the spoil bank beside the pond, the sulfides become oxidized and the acid thus formed is washed into the pond by rainwater. The water in the pond then becomes acid and, if the pH is 4.0 or lower, may be toxic to fish. Ponds containing water that has a pH lower than 5.5 generally are not satisfactory for fish growth or spawning. Slaked lime can be used to correct the acidity, but too much lime is likely to make the water unsuitable for the irrigation of tobacco.

The excavated ponds that are suitable for fish can be stocked and fertilized in the same way as the impounded ponds in soil association 8.

5. Lynchburg-Portsmouth-Rutledge association

This soil association consists chiefly of large, oval-shaped, very poorly drained depressions and the surrounding nearly level, wet lowlands. Very little of the acreage is cultivated. Pine and scrub oak grow on the better drained sites, and hardwoods and an understory of canes, briars, and shrubs cover the wetter sites.

This area provides favorable summer habitats for deer and an ample supply of summer browse. Deer range from this area across soil association 8 into the swampy land in soil association 7, where they find heavy cover for refuge during the hunting season.

Food for quail is scarce in this area. Most of the soils are too wet for bicolor lespedeza, but some places are suited to annual plants, such as cowpeas, browntop millet, and annual lespedezas, that furnish food for quail.

Both food and cover are ample for rabbits, which are numerous. Much of the area, however, is so densely wooded that hunting is difficult.

6. Goldsboro-Lynchburg-Coxville association

About 50 percent of the acreage in this association of moderately well drained to poorly drained soils is cultivated, and about 50 percent is in woods. The wettest sites are covered by hardwoods. The remaining woodlands are mostly stands of pine and a few scattered hardwoods.

Probably the largest number of quail per acre in Lee County is in this association. Food and cover are well distributed. Food generally is plentiful except late in winter and early in spring. Planting bicolor lespedeza in strips, one-eighth of an acre in size, will help to provide food for this period. These plantings should be on soils that are either naturally well drained or are drained artificially. Controlled burning in some of the woodlands will reduce the amount of accumulated duff and hardwood brush and thus improve habitats for quail and conditions for hunting.

Doves prefer to feed where there is some bare ground. They do not frequent this area in fall, because the fields are covered by a dense growth of grass, weeds, and crops. After livestock have grazed the fields, the vegetation is thinner, and usually doves are fairly numerous by December. To attract doves for hunting earlier in the season, fields can be planted to browntop millet and cultivated to keep the space between the rows free of weeds and grass.

Excavated ponds as a source of irrigation water are common in this area. Some of them are suitable for fish, but in others the water is likely to become acid, as it does in some ponds in soil association 4.

7. Wehadkee-Swamp association

This association consists of the flood plains along the three major streams in Lee County: the Lynches River, the Black River, and Scape Ore Swamp. The flood plains of the Lynches River and Scape Ore Swamp and some of the adjoining land furnish favorable habitats for deer. Once numerous, deer were hunted so intensively that they nearly became extinct. They have been reintroduced, however, and the herd is increasing rapidly. Plantings of tall fescue and white clover, 1 acre to 10 acres in size, on the higher lying land will attract deer locally.

Fairly good habitats for squirrels are provided in this association, but the food supply is limited. Acorns, an important fall and winter food for squirrels, are scarce because not many of the larger oaks remain. Other sources of fall and winter food are beechnut, dogwood, and hickory trees. Choice foods for spring and summer are provided by cottonwood trees (the cambium and buds), elm trees (seeds and buds), maple trees (seeds and buds), tuliptrees (seeds and buds), and mushrooms.

Flat wooded areas, which are several acres in size and can be flooded to a depth of 1 inch to 15 inches by diking on one or more sides, are good sites for woodland duck-ponds (4). The ponds can be flooded only in winter since, if they are flooded the year round, the trees will be killed. Acorns and beechnuts are choice duck foods. Smartweed and panicums furnish additional food where the tree canopy is open. Clearings can be made and planted to browntop millet, Japanese millet, or smartweed. Pumps are needed in many places to flood the ponds and in some places to provide adequate drainage for planting.

8. Lakeland-Vaughn-Gilead association

The soils in this association are well drained to excessively drained and are not very productive. Consequently, the supply of natural foods for wildlife is limited. About 70 percent of the acreage is in woodland. Most of the farms are small. Corn is harvested by hand, and only a small acreage is planted to soybeans, so there is little crop residue to supply food. The production of acorns by scrub oaks is unreliable.

If there is a dependable source of food in fall, in winter, and early in spring, habitats for quail are good. A perennial plant, such as bicolor lespedeza, is preferable to annuals on these coarse-textured soils. A strip of bicolor, one-eighth of an acre in size, for every 25 to 35 acres, is about as intense a planting ratio as is practical in this area. On these soils, bicolor lespedeza requires an annual or biennial application of a fertilizer, such as 0-14-14, to produce a satisfactory seed crop.

The dove population in this area generally is small. Fields that have been planted to watermelons, however, are particularly attractive to doves in fall and early in winter. Grass and weed seeds and the seeds of any watermelons that are left to rot in the fields are good foods. Watermelon vines leave little residue, so there is some bare ground in the fields, a condition that doves require in their feeding grounds. In some fields browntop millet is planted for hay following a small grain, and these fields are used by doves after the hay is harvested.

There are many good sites for farm fishponds in this association. Stocked fishponds provide food and recreation, and the sale of fish and fishing privileges is a source of income. Satisfactory fish production requires (1) soil conservation practices on the watershed to prevent silting and muddy water; (2) the diversion of excess runoff around ponds that have a large watershed; (3) clearing the pond basin of trees and brush; (4) removing all wild fish by applying rotenone before stocking; (5) stocking at a rate of 1,000 bluegills and 100 bass fingerlings per surface acre of water; (6) regular applications of a mineral fertilizer of a 4-4-1 ratio from March to October. Adequate fertilization will help to increase the growth of plankton, which then shade out the undesirable submerged weeds and, indirectly, help to increase the supply of food for fish. Standard procedures for management of farm fishponds are suggested in bulletins of the U.S. Department of Agriculture (3).

9. Gilead-Vaocluse association

Over two-thirds of the acreage in this association is in woods. Most of this wooded acreage is steep and eroded. About 30 percent of the acreage is cultivated. The soils are well drained to excessively drained and are not very productive. Thus, the supply of natural foods for wildlife is limited.

There are very few good sites for duck fields, since the steep side slopes prevent the diking and flooding of fields. There are, however, many good sites for farm fishponds. These can be established and managed by the methods suggested for fishponds in soil association 8.

Since most of the corn grown is harvested by hand with little waste and only a small acreage is planted to soybeans, the amount of food available for quail and doves from these crops is not significant. The quail population will be benefited by the same practices suggested for soil association 8. There should be no burning of duff and brush in this area, however, since the soils are highly erodible. The dove population generally is small, but doves can be attracted locally by planting rows of browntop millet in fields.

Engineering Properties of the Soils⁵

Some soil properties are of special interest to engineers because they affect the construction and maintenance of roads, airports, pipelines, building foundations, facilities for water storage, erosion control structures, drainage systems, and sewage disposal systems. The properties most important to the engineer are permeability to water, shear strength, compaction characteristics, soil drainage, shrink-

swell characteristics, grain size, plasticity, and pH. Depth to water table, depth to bedrock, and topography also are important.

This soil survey report for Lee County contains information that can be used by engineers to—

1. Make soil and land use studies that will aid in selecting and developing industrial, business, residential, and recreational sites.
2. Make preliminary estimates of the engineering properties of soils in the planning of agricultural engineering systems, farm ponds, irrigation systems, and diversion terraces.
3. Make preliminary evaluations of soil and ground conditions that will aid in selecting highway, airport, pipeline, and cable locations and in planning detailed investigations at the selected locations.
4. Locate probable sources of sand and gravel and other construction materials.
5. Correlate performance of engineering structures with soil mapping units, to develop, for overall planning, information that will be useful in designing and maintaining engineering structures.
6. Determine the suitability of soil mapping units for cross-country movements of vehicles and construction equipment.
7. Supplement the information obtained from other published maps, reports, and aerial photographs to make maps and reports that can be used readily by engineers.
8. Develop other preliminary estimates for construction purposes pertinent to the area.

This report will not eliminate the need for on-site sampling and testing of soils for the design and construction of specific engineering works and uses. The interpretations in the report should be used primarily in planning more detailed field investigations to determine the condition of the soil material in place at a proposed site.

Some of the terms used by the soil scientist may be unfamiliar to the engineer, and some terms have special meanings in soil science. These terms are defined in the Glossary at the back of this report.

Engineering classification systems

Most highway engineers classify soil materials according to the system approved by the American Association of State Highway Officials (AASHTO) (7). It is an engineering-property classification based on mechanical analysis, plasticity, and field performance of soils in highways. In this system, all soils are classified in seven principal groups. The groups range from A-1 (gravelly soils of high bearing capacity, the best soils for subgrades) to A-7 (clay soils having low strength when wet, the poorest soils for subgrades). Within each of the principal groups, the relative engineering value of the soil material is indicated by a group index number, which is based on the behavior of soils and soil materials in embankments, subgrades, and subbases. Group indexes range from 0 for "good" subgrade material to 20 for "very poor" subgrade material. The group index number is shown in parentheses after the soil group number if the classification is made from test data. The classification of the soils in Lee County by the AASHTO system is given in table 5.

Some engineers prefer to use the Unified soil classification system established by the Corps of Engineers, U.S. Army (10). This system is based on the texture and plasticity of soils and their performance as engineering construction materials. Soil materials are classified in eight coarse-grained groups, six fine-grained groups, and

⁵ W. C. Sizemore, agricultural engineer, Soil Conservation Service, assisted in the preparation of this section.

one organic group. The classification of the soils in the county by the Unified system is given in table 5.

Summary of engineering properties

Brief descriptions of the soils in Lee County and estimates of their engineering properties are given in table 5.

Classifications by the Unified and AASHTO systems for Grady, Leaf, Lynchburg, Marlboro, and Rains soils are based on the engineering test data for those soils given in table 7. The classifications for the other soils are estimates based, to some extent, on field tests and on other information collected in the soil survey.

The column headed "Permeability" indicates the rate at which water will move through soil material that is not compacted; it is measured in inches per hour. Permeability of the soil was estimated as it occurs in place. The estimates were based on soil structure and porosity and were compared with the results of permeability tests on undisturbed cores of similar soil material.

The column headed "Available water capacity" is an approximation of the amount of capillary water in the soil when the soil is wet to field capacity. It is measured in inches per inch of soil. When the soil is air dry, this amount of water will wet the soil material described to a depth of 1 inch without deeper percolation. The estimates for permeability and for available water capacity are particularly significant in planning drainage and irrigation systems.

In the column headed "Reaction," the estimated degree of acidity or alkalinity is expressed in pH value, which is the common logarithm of the reciprocal of the hydrogen-

ion concentration of a solution. A notation of pH 7.0 indicates precise neutrality; higher values indicate increasing alkalinity, and lower values indicate increasing acidity.

The ratings in the column headed "Dispersion" indicate the degree to which, and the rapidity with which, the soil slakes in water and the soil structure breaks down. Ratings are high, moderate, and low. A rating of "high" indicates that the soil slakes readily; it is readily eroded by wind and water. In general, sandy soils have a high degree of dispersion, and clayey soils, a low degree.

The shrink-swell potential indicates the volume change to be expected with a change in the moisture content of the soil; that is, shrinking of the soil when it dries and swelling when it takes up moisture. Ratings are high, moderate, and low. In general, soils classified as CH and A-7 have high or very high shrink-swell potential. Soils that have a low shrink-swell potential are (1) clean sands, such as Lakeland and Lakewood, and gravels, which are structureless (single grain); (2) soils that have small amounts of nonplastic to slightly plastic fines; and (3) most other nonplastic to slightly plastic soil materials (SW, SP, SM).

Table 6 outlines the suitability of the soils for various engineering uses. It also shows some characteristics of soils that affect their stability in certain structures and that influence the design of structures. The estimates on suitability for winter grading, for use as subgrade material and road fill, and as a source of topsoil and of sand and gravel probably are of most interest to highway engineers. The other columns are of interest to conservation engineers.

TABLE 5.—*Brief description of soils and their*

Map symbol	Soil	Brief description of soil and site	Depth to seasonally high water table	Depth from surface (typical profile)	Classification
					USDA texture
Ca	Cahaba sandy loam.	1 to 1½ feet of sandy loam over 1 to 2 feet of sandy clay loam; developed from beds of unconsolidated sandy clays and clays.	Feet 3+	Inches 0 to 18-- 18 to 32	Sandy loam----- Sandy clay loam-----
Cx Co	Coxville loam. Coxville sandy loam.	½ to 1 foot of poorly drained loam or sandy loam over 2 feet of sandy clay; derived from unconsolidated sandy clays and clays.	0	0 to 12-- 12 to 36--	Sandy loam to loam----- Sandy clay loam to sandy clay.
Du	Dunbar sandy loam.	1 foot of somewhat poorly drained sandy loam over 2 feet of sandy clay loam or sandy clay; derived from beds of unconsolidated sandy clay loams, sandy clays, and clays.	1	0 to 12-- 12 to 36--	Sandy loam----- Sandy clay loam to sandy clay.
EnB EsA EsB EsC	Eustis sand, 0 to 6 percent slopes. Eustis sand, shallow, 0 to 2 percent slopes Eustis sand, shallow, 2 to 6 percent slopes. Eustis sand, shallow, 6 to 10 percent slopes.	2½ to 10 feet of excessively drained sand; derived from a marine deposit of beds of unconsolidated sands.	5 +	0 to 12-- 12 to 46--	Sand----- Sand to loamy sand

The ratings on suitability for winter grading are good, fair, and poor. As indicated in the table, many of the soils in the county can be graded in winter. Soils that are underlain by a high water table and soils that have a slowly permeable subsoil are rated as "poor." Also rated as "poor" are plastic clay soils, which are difficult to handle when wet and must be dried to the proper moisture content for compaction.

Ratings on suitability for use as road subgrade are based on the estimated engineering classifications of the soils, as given in table 5. Ratings are good, fair, and poor. Soils that have a plastic clay layer that impedes internal drainage have low stability when wet; such soils are rated as "poor."

The suitability of a soil for road-fill material depends largely on its texture, plasticity, and content of water. The ratings used are good, fair, and poor. Some of the soils listed as "fair to good" or as "fair" are highly erodible if the slope is 2 percent or more. Highly plastic soil material is rated as "poor" or "fair" for road fill, depending on how much water the material contains and how difficult it is to handle, to dry, and to compact.

Many of the soils are not suitable sources of sand and gravel. Those soils rated as fair sources of sand consist of poorly graded fine sands.

Suitability of the soils for sewage disposal is rated as very good, good, fair, poor, and very poor. In general, soils that have a high water table and those that have a slowly permeable or very slowly permeable subsoil are not suitable for septic disposal fields.

The rate of seepage, which affects farm pond reservoir areas, is rated as excessive, rapid, moderate, and slow. The

features that influence the construction and maintenance of farm pond embankments are strength and stability and rate of permeability. Okenee and Portsmouth soils have a high content of organic material and are not suitable for use in embankments.

The features that affect agricultural drainage are permeability, presence of a high water table, and the presence or lack of suitable outlets. The water-holding capacity and the infiltration rate are among the features affecting irrigation. Terraces and diversions are not needed on many of the soils. Cahaba, Faceville, Magnolia, Marlboro, Norfolk, Orangeburg, and Ruston soils are erodible if the slope is 2 percent or more, and Gilead and Vaucluse soils are highly erodible.

Omitted from table 6 are Swamp, Gullied land, Borrow pits, and Mixed alluvial land. The characteristics of these land types vary so much that it is not possible to make interpretations that are applicable to an entire mapping unit. As the need arises, on-the-spot interpretations can be made for individual areas.

Table 7 gives the test data for five soils in the county. The mechanical analysis, which gives the proportion of the different sizes of particles, was made by sieve and hydrometer methods. The proportion of different sized particles in the soil affects the behavior of the material when it is used in engineering structures. Tests for liquid limit, which is the moisture content at which a soil passes from a plastic to a liquid state; the plasticity index, which is the numerical difference between the liquid limit and the plastic limit; and the classification of each soil horizon by the AASHTO and Unified systems are also reported.

estimated physical and chemical properties

Classification—Continued		Percentage passing sieve—		Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
Unified	AASHTO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
SM.....	A-4.....	100	35 to 45..	<i>Inches per hour</i> 0.80 to 2.50..	<i>Inches per inch of soil</i> 0.09	5.6 to 6.0..	High.....	Low.
CL.....	A-6 or A-7...	100	55 to 70..	0.05 to 0.20..	.12	5.1 to 5.5..	Moderate.....	Moderate.
SM.....	A-4.....	100	35 to 45..	0.05 to 0.20..	.13	5.1 to 5.5..	High.....	Low.
CL.....	A-6.....	100	55 to 65..	0.05 to 0.20..	.12	5.6 to 6.0..	Low to moderate..	Low to moderate.
SM.....	A-4.....	100	35 to 45..	0.20 to 0.80..	.10	5.6 to 6.0..	High.....	Low.
CL.....	A-6.....	100	55 to 65..	0.05 to 0.02..	.10	5.1 to 5.5..	Low to moderate..	Low to moderate.
SP-SM.....	A-3.....	100	5 to 10..	Over 10.0....	.06	5.1 to 5.5..	High.....	Low.
SP-SM.....	A-3.....	100	5 to 10..	Over 10.0....	.06	5.6 to 6.0..	High.....	Low.

TABLE 5.—*Brief description of soils and their estimated*

Map symbol	Soil	Brief description of soil and site	Depth to seasonally high water table	Depth from surface (typical profile)	Classification
					USDA texture
FaA	Faceville loamy sand, 0 to 2 percent slopes.	1 foot of well-drained loamy sand over 2 feet of sandy clay; developed from beds of unconsolidated sandy clays.	Feet 3	Inches 0 to 12--- 12 to 36---	Loamy sand-----
FaB	Faceville loamy sand, 2 to 6 percent slopes.				Sandy clay-----
FaB2	Faceville loamy sand, 2 to 6 percent slopes, eroded.				
FaC2	Faceville loamy sand, 6 to 10 percent slopes, eroded.				
GeA	Gilead loamy sand, 0 to 2 percent slopes.	1 to 2½ feet of well-drained loamy sand underlain by ½ to 1½ feet of compact to slightly cemented sandy clay loam; derived from beds of unconsolidated sandy clays.	3+	0 to 18--- 18 to 27---	Loamy sand-----
GeB	Gilead loamy sand, 2 to 6 percent slopes.				Sandy clay-----
GeB2	Gilead loamy sand, 2 to 6 percent slopes, eroded.				
GeC	Gilead loamy sand, 6 to 10 percent slopes.				
GeC2	Gilead loamy sand, 6 to 10 percent slopes, eroded.				
GeD	Gilead loamy sand, 10 to 15 percent slopes.				
GeD2	Gilead loamy sand, 10 to 15 percent slopes, eroded.				
GkB	Gilead loamy sand, thick surface, 2 to 6 percent slopes.	Same.	3+	0 to 30--- 30 to 38---	Loamy sand-----
GkC	Gilead loamy sand, thick surface, 6 to 10 percent slopes.				Sandy loam-----
Go	Goldsboro loamy sand.	1 to 1½ feet of moderately well drained loamy sand over 2 to 3 feet of sandy clay loam; derived from beds of unconsolidated sandy clays.	1	0 to 10--- 10 to 36---	Loamy sand----- Sandy clay loam-----
Gr	Grady loam.	½ to 1 foot of poorly drained loam or sandy loam over 1½ to 2 feet of sandy clay loam to sandy clay; derived from beds of unconsolidated sands and clays.	0	0 to 12--- 12 to 36---	Sandy loam or loam-----
Gs	Grady sandy loam.				Sandy clay or sandy clay loam.
Iz	Izagora sandy loam.	1 to 1½ feet of moderately well drained to somewhat poorly drained sandy loam over 1 to 2 feet of sandy clay loam; derived from beds of unconsolidated sands and clays deposited by streams.	1	0 to 12--- 12 to 36---	Sandy loam----- Sandy clay loam-----
Ka	Kalmia loamy sand.	1 to 2½ feet of well-drained loamy sand over 1 to 3 feet of sandy clay loam; derived from beds of unconsolidated sands and clays deposited by streams.	3+	0 to 12--- 12 to 36---	Loamy sand----- Sandy clay loam-----
Kt	Kalmia loamy sand, thick surface.	Same.	3+	0 to 30--- 30 to 38---	Loamy sand----- Sandy loam-----
LaB	Lakeland sand, 0 to 6 percent slopes.	3 to 15 feet of excessively drained sand; developed from beds of unconsolidated sands.	5+	0 to 8--- 8 to 54---	Sand-----
LaD	Lakeland sand, 6 to 15 percent slopes.				Sand or loamy sand-----
LkA	Lakeland sand, shallow, 0 to 2 percent slopes.				
LkB	Lakeland sand, shallow, 2 to 6 percent slopes.				
LkC	Lakeland sand, shallow, 6 to 10 percent slopes.				
LnB	Lakeland sand, terrace, 0 to 6 percent slopes.				
LoC	Lakewood sand, 0 to 10 percent slopes.	3 to 8 feet of excessively drained white sand; derived from unconsolidated sands.	5+	0 to 16--- 16 to 36---	Sand----- Sand-----

physical and chemical properties—Continued

Classification—Continued		Percentage passing sieve—		Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
SM.....	A-2.....	100	10 to 30..	<i>Inches per hour</i> Over 10.0.....	<i>Inches per inch of soil</i> .07	<i>pH</i> 6.1 to 6.5....	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.10	5.6 to 6.0....	Low.....	Low to moderate.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	5.6 to 6.0....	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.10	5.6 to 6.0....	Moderate.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	5.6 to 6.0....	High.....	Low.
SM.....	A-4.....	100	35 to 45..	0.05 to 0.20..	.07	5.6 to 6.0....	High.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.07	5.6 to 6.0....	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.10	5.1 to 5.5....	Moderate.....	Low to moderate.
SM or Pt.....	A-4.....	100	35 to 45..	0.80 to 2.50..	.17	5.1 to 5.5....	High.....	Low.
SC or CL.....	A-4 or A-7..	100	45 to 65..	0.05 to 0.20..	.12	5.6 to 6.0....	Low.....	Low to moderate.
SM.....	A-4.....	100	35 to 45..	0.20 to 0.80..	.07	5.6 to 6.0....	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.12	5.1 to 5.5....	Moderate.....	Low to moderate.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	6.1 to 6.5....	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.10	5.6 to 6.0....	Moderate.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	6.1 to 6.5....	High.....	Low.
SM.....	A-4.....	100	35 to 45..	2.50 to 5.00..	.07	5.6 to 6.0....	High.....	Low.
SP-SM.....	A-3.....	100	5 to 10..	Over 10.0.....	.06	5.1 to 5.5....	High.....	Low.
SP-SM, SM.....	A-2 or A-3..	100	5 to 30..	Over 10.0.....	.06	5.6 to 6.0....	High.....	Low.
SP-SM.....	A-3.....	100	5 to 10..	Over 10.0.....	.05	5.5 to 6.0....	High.....	Low.
SP-SM.....	A-3.....	100	5 to 10..	Over 10.0.....	.05	5.0 to 5.5....	High.....	Low.

TABLE 5.—*Brief description of soils and their estimated*

Map symbol	Soil	Brief description of soil and site	Depth to seasonally high water table	Depth from surface (typical profile)	Classification
					USDA texture
Ls	Leaf fine sandy loam.....	½ to 1 foot of poorly drained fine sandy loam over 2 to 2½ feet of sandy clay; derived from unconsolidated sandy clays and clays deposited by streams.	Feet 0	Inch 0 to 6.... 6 to 30....	Fine sandy loam..... Sandy clay.....
Ly	Lynchburg sandy loam.....	1 to 1½ feet of somewhat poorly drained sandy loam over 2 to 2½ feet of sandy clay loam; derived from beds of unconsolidated sands and clays.	1	0 to 12.... 12 to 34....	Sandy loam..... Sandy clay loam.....
MaA	Magnolia loamy sand, 0 to 2 percent slopes.	½ to 1 foot of well-drained loamy sand over 2 to 3 feet of sandy clay; derived from beds of unconsolidated sandy clays and clays.	3	0 to 12.... 12 to 36....	Loamy sand.....
MaB2	Magnolia loamy sand, 2 to 6 percent slopes, eroded.				Sandy clay.....
MbA	Marlboro loamy sand, 0 to 2 percent slopes.	½ to 1 foot of well-drained loamy sand over 2 to 3 feet of sandy clay; derived from beds of unconsolidated sandy clays and clays.	3	0 to 12.... 12 to 36....	Loamy sand.....
MbB	Marlboro loamy sand, 2 to 6 percent slopes.				Sandy clay.....
MbB2	Marlboro loamy sand, 2 to 6 percent slopes, eroded.	1 to 1½ feet of poorly drained sandy loam over 2 feet of sandy clay loam; derived from unconsolidated sands and clays deposited by streams.	0	0 to 8.... 8 to 32....	Sandy loam.....
MbC2	Marlboro loamy sand, 6 to 10 percent slopes, eroded.				Sandy loam to sandy clay loam.
My	Myatt sandy loam.....				
NfA	Norfolk loamy fine sand, 0 to 2 percent slopes.	1 to 2½ feet of well-drained loamy sand over 1 to 3 feet of sandy clay loam; derived from beds of unconsolidated sands and clays.	3	0 to 18.... 18 to 44....	Loamy sand.....
NoA	Norfolk loamy sand, 0 to 2 percent slopes.				Sandy clay loam.....
NoB	Norfolk loamy sand, 2 to 6 percent slopes.				
NoB2	Norfolk loamy sand, 2 to 6 percent slopes, eroded.				
NoC	Norfolk loamy sand, 6 to 10 percent slopes.				
NoC2	Norfolk loamy sand, 6 to 10 percent slopes, eroded.				
NtA	Norfolk loamy sand, thick surface, 0 to 2 percent slopes.	Same.	3+	0 to 30.... 30 to 44....	Loamy sand.....
NtB	Norfolk loamy sand, thick surface, 2 to 6 percent slopes.				Sandy loam to sandy clay loam.
NtC	Norfolk loamy sand, thick surface, 6 to 10 percent slopes.				
Ok	Okenee loam.	1 to 1½ feet of very poorly drained organic loam over 1 to 2 feet of sandy clay; developed from beds of unconsolidated sands and clays deposited by streams.	0	0 to 18.... 18 to 36....	Loam..... Sandy clay.....
OrA	Orangeburg loamy sand, 0 to 2 percent slopes.	1 to 1½ feet of well-drained loamy sand over 2 to 3 feet of sandy clay loam; developed from thick beds of sands and clays.	3	0 to 18.... 18 to 36....	Loamy sand.....
OrB	Orangeburg loamy sand, 2 to 6 percent slopes.				Sandy clay loam.....
OrB2	Orangeburg loamy sand, 2 to 6 percent slopes, eroded.				
OrC2	Orangeburg loamy sand, 6 to 10 percent slopes, eroded.				
Pm	Plummer loamy sand.	1 foot of very poorly drained loamy sand underlain by sand or loamy sand.	0	0 to 12.... 12 to 42....	Loamy sand.....
Pn	Plummer sand, terrace.				Loamy sand or sand.....

physical and chemical properties—Continued

Classification—Continued		Percentage passing sieve -		Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
SM or ML	A-4	100	45 to 75	<i>Inches per hour</i> 0.05 to 0.20	<i>Inches per inch of soil</i> .13	<i>pH</i> 5.6 to 6.0	High	Low.
CL	A-6 or A-7	100	65 to 90	Less than 0.05	.12	5.1 to 5.5	Low	Moderate to high.
SM or ML	A-4	100	35 to 55	0.80 to 2.50	.10	5.6 to 6.0	High	Low.
CL	A-6	100	55 to 65	0.20 to 0.80	.10	5.1 to 5.5	Moderate to high	Moderate.
SM	A-2	100	10 to 30	0.80 to 2.50	.07	6.1 to 6.5	High	Low.
CL	A-6	100	55 to 65	0.05 to 0.20	.10	5.6 to 6.0	Low	Moderate.
SM	A-2	100	10 to 30	0.20 to 0.80	.07	6.1 to 6.5	High	Low.
CL	A-6	100	55 to 65	0.05 to 0.20	.10	5.6 to 6.0	Low	Moderate.
SM	A-4	100	35 to 45	0.80 to 2.50	.08	5.1 to 5.5	High	Low.
SM	A-4 or A-6	100	35 to 65	0.05 to 0.80	.11	5.1 to 5.5	Moderate to high	Low to moder- ate.
SM	A-2	100	10 to 30	Over 10.0	.07	5.6 to 6.0	High	Low.
CL	A-4	100	55 to 65	0.05 to 0.20	.11	5.6 to 6.0	Moderate	Low.
SM	A-2	100	10 to 30	Over 10.0	.07	5.6 to 6.0	High	Low.
SM or CL	A-4	100	35 to 65	0.05 to 0.80	.11	5.6 to 6.0	High	Low.
Pt	A-6	100	35 to 75	0.80 to 2.50	.13	5.1 to 5.5	Moderate	Low.
CL	A-6	100	55 to 65	0.05 to 0.20	.14	5.1 to 5.5	Low to moderate	Moderate.
SM	A-2	100	10 to 30	Over 10.0	.07	5.6 to 6.0	High	Low.
CL	A-4	100	55 to 65	0.05 to 0.20	.11	5.6 to 6.0	Moderate	Low.
SM	A-2	100	10 to 30	Over 10.0	.06	5.1 to 5.5	High	Low.
SP-SM, SM	A-2 or A-3	100	5 to 30	Over 10.0	.05	5.1 to 5.5	High	Low.

TABLE 5.—*Brief description of soils and their estimated*

Map symbol	Soil	Brief description of soil and site	Depth to seasonally high water table	Depth from surface (typical profile)	Classification
					USDA texture
Po Ps	Portsmouth loam. Portsmouth sandy loam.	1 to 1½ feet of very poorly drained loam or sandy loam over 1 to 2 feet of sandy clay; derived from beds of unconsolidated sandy clays and clays.	Feet 0	Inches 0 to 12--- 12 to 36--	Loam or sandy loam----- Sandy clay-----
Ra	Rains loamy sand.	1 foot of poorly drained loamy sand over 2 to 2½ feet of sandy clay loam; derived from beds of unconsolidated sands and clays.	0	0 to 9--- 9 to 27---	Loamy sand----- Sandy clay loam-----
RsA	Ruston loamy sand, 0 to 2 percent slopes.	1 to 2½ feet of well-drained loamy sand over 2 to 2½ feet of sandy clay loam; derived from beds of unconsolidated sands and clays.	3	0 to 12--- 12 to 36--	Loamy sand----- Sandy clay loam-----
RsB	Ruston loamy sand, 2 to 6 percent slopes.				
RsB2	Ruston loamy sand, 2 to 6 percent slopes, eroded.				
RsC	Ruston loamy sand, 6 to 10 percent slopes.				
RsC2	Ruston loamy sand, 6 to 10 percent slopes, eroded.				
RtA	Ruston loamy sand, thick surface, 0 to 2 percent slopes.	Same.	3	0 to 30--- 30 to 38--	Loamy sand----- Sandy loam-----
RtB	Ruston loamy sand, thick surface, 2 to 6 percent slopes.				
RtC	Ruston loamy sand, thick surface, 6 to 10 percent slopes.				
Ru	Rutlege loamy sand.	1 to 1½ feet of very poorly drained loamy sand, high in organic-matter content, over 1 or 2 feet of loamy sand; derived from beds of sands.	0	0 to 12--- 12 to 26--	Loamy sand----- Loamy sand-----
VaB	Vaocluse loamy sand, 2 to 6 percent slopes.	½ to 2½ feet of well-drained loamy sand underlain by ½ to 1½ feet of compact to slightly cemented sandy clay loam to sandy clay; derived from beds of unconsolidated sands and clays.	5+	0 to 12--- 12 to 25--	Loamy sand----- Sandy clay loam-----
VaB2	Vaocluse loamy sand, 2 to 6 percent slopes, eroded.				
VaC	Vaocluse loamy sand, 6 to 10 percent slopes.				
VaC2	Vaocluse loamy sand, 6 to 10 percent slopes, eroded.				
VaD	Vaocluse loamy sand, 10 to 15 percent slopes.				
VaD2	Vaocluse loamy sand, 10 to 15 percent slopes, eroded.				
VaE2	Vaocluse loamy sand, 15 to 25 percent slopes, eroded.				
VyC3	Vaocluse sandy loam, 6 to 10 percent slopes, severely eroded.				
VtB	Vaocluse loamy sand, thick surface, 2 to 6 percent slopes.	Same.	5+	0 to 30--- 30 to 36--	Loamy sand----- Sandy loam to sandy clay loam.
VtD	Vaocluse loamy sand, thick surface, 6 to 15 percent slopes.				
Wa	Wahce fine sandy loam-----	½ to 1 foot of moderately well drained fine sandy loam over 2 feet of sandy clay; deposited by streams.	1	0 to 8--- 8 to 28---	Fine sandy loam----- Sandy clay-----
We	Wehadkee silt loam-----	½ foot of very poorly drained silt loam over ½ to 1½ feet of silty clay; derived from beds of silty clay deposited by streams.	0	0 to 5--- 5 to 15---	Silt loam----- Silty clay-----

physical and chemical properties—Continued

Classification—Continued		Percentage passing sieve—		Permeability	Available water capacity	Reaction	Dispersion	Shrink-swell potential
Unified	AASHO	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)					
SM or Pt.....	A-4.....	100	35 to 75..	<i>Inches per hour</i> 0.80 to 2.50..	<i>Inches per inch of soil</i> .11	<i>pH</i> 5.1 to 5.5..	Moderate.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.14	5.1 to 5.5..	Low.....	Low to moderate.
SM or ML.....	A-4 or A-5..	100	35 to 55..	Over 10.0.....	.06	5.6 to 6.0..	High.....	Low.
SM or CL.....	A-2 or A-4..	100	30 to 65..	0.20 to 0.80..	.11	5.1 to 5.5..	Moderate to high..	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.07	5.6 to 6.0..	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 2.20..	.11	5.6 to 6.0..	Moderate.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.07	5.6 to 6.0..	High.....	Low.
SM.....	A-4.....	100	35 to 45..	0.80 to 2.50..	.10	5.6 to 6.0..	High.....	Low.
SM or Pt.....	A-4.....	100	35 to 75..	Over 10.0.....	.11	5.1 to 5.5..	High.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.10	5.1 to 5.5..	High.....	Low.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	5.6 to 6.0..	High.....	Low.
CL.....	A-4.....	100	55 to 65..	0.05 to 0.20..	.09	5.1 to 5.5..	Moderate.....	Low to moderate.
SM.....	A-2.....	100	10 to 30..	Over 10.0.....	.06	5.6 to 6.0..	High.....	Low.
SM or CL.....	A-4.....	100	35 to 65..	0.05 to 0.20..	.09	5.1 to 5.5..	High.....	Low to moderate.
SM or SC.....	A-4 or A-6..	100	35 to 45..	0.20 to 0.80..	.15	4.5 to 5.0..	High.....	Low to moderate.
CL.....	A-6.....	100	55 to 65..	0.05 to 0.20..	.14	5.1 to 5.5..	Low.....	Moderate.
ML.....	A-4.....	100	90 to 100..	0.20 to 0.80..	.13	5.1 to 5.5..	Moderate.....	Low.
CL.....	A-7 or A-6..	100	90 to 100..	0.05 to 0.20..	.13	5.1 to 5.5..	Low.....	Moderate to high.

TABLE 6.—*Interpretations of*

Soil series and map symbol	Suitability for—			Suitability as a source of—		Suitability for sewage disposal
	Winter grading	Road subgrade	Road fill	Topsoil	Sand	
Cahaba (Ca)-----	Fair to good--	Good-----	Good-----	Surface layer fair.	Unsuitable-----	Good-----
Coxville (Co, Cx)-----	Poor ¹ -----	Fair; poor below depth of ½ to 1 foot.	Fair-----	Poor-----	Unsuitable-----	Very poor; slowly permeable subsoil; high water table. ¹
Dunbar (Du)-----	Fair; poor below depth of 1 foot. ¹	Fair; poor below depth of 1 foot.	Fair-----	Fair-----	Unsuitable-----	Poor; slowly permeable subsoil; high water table much of the time. ¹
Eustis (EnB, EsA, EsB, EsC)	Good-----	Poor; good if confined.	Fair if slopes are gentle.	Poor-----	Fair; poorly graded fine sands.	Very good-----
Faceville (FaA, FaB, FaB2, FaC2).	Good-----	Fair to good--	Fair to good--	Good-----	Unsuitable-----	Fair to good-----
Gilead (GeA, GeB, GeB2, GeC, GeC2, GeD, GeD2, GκB, GκC).	Good-----	Fair to good--	Fair to good if slopes are gentle.	Fair-----	Fair; ² poorly graded fine sands.	Fair; compact sandy clay loam subsoil.
Goldsboro (Go)-----	Fair; poor below depth of 1 foot. ¹	Fair to good--	Fair to good--	Fair-----	Unsuitable-----	Fair; internal drainage somewhat impeded.
Grady (Gr, Gs)-----	Poor ¹ -----	Fair to unsuitable. ³	Fair to unsuitable. ³	Poor to fair--	Unsuitable-----	Very poor; high water table. ¹
Izagora (Iz)-----	Fair; poor below depth of 1 foot. ¹	Fair-----	Fair-----	Poor to fair--	Unsuitable-----	Poor; slowly permeable subsoil; high water table part of the time. ¹
Kalmia (Ka, Kt)-----	Good-----	Fair to good--	Fair to good--	Good-----	Fair; ² poorly graded fine sand.	Good-----
Lakeland (LaB, LaD, LkA, LkB, LkC, LnB).	Good-----	Poor to fair; good if confined.	Fair if slopes are gentle.	Poor-----	Fair for sand-----	Very good-----
Lakewood (LoC)-----	Good-----	Poor; good if confined.	Poor-----	Poor-----	Fair for sand-----	Very good-----
Leaf (Ls)-----	Poor ¹ -----	Fair; poor below depth of ½ to 1 foot.	Fair-----	Poor to fair--	Unsuitable-----	Very poor; very slowly permeable subsoil; high water table at times. ¹
Lynchburg (Ly)-----	Fair; poor below depth of 1 foot. ¹	Fair-----	Fair-----	Fair-----	Unsuitable-----	Poor; high water table at times. ¹

engineering properties of the soils

Soil features affecting engineering practices

Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Slow seepage-----	Adequate strength and stability; moderate permeability.	Not needed except in a few low spots in which permeability is slow.	Moderate infiltration rate; moderate water-holding capacity.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Slow seepage-----	Moderate strength and stability; slow permeability.	Seasonally high water table; slow permeability.	Moderate water-holding capacity; low infiltration rate.	Not needed-----	No hazard.
Slow seepage-----	Moderate strength and stability; slow to moderate permeability.	Seasonally high water table; slow to moderate permeability.	Moderate water-holding capacity; moderate infiltration rate.	Not needed-----	Not needed.
Excessive seepage-	Low strength and stability; rapid permeability.	Not needed-----	Low water-holding capacity; rapid infiltration rate.	Not needed-----	Not needed.
Slow seepage in subsoil.	Moderate to high strength and stability; slow permeability.	Not needed-----	High water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Slow seepage in subsoil.	Moderate to high strength and stability; slow permeability.	Hillside seepage; seasonally high water table along natural drains.	Low water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are highly erodible.	Slopes of 2 percent or more are highly erodible.
Slow seepage-----	Moderate to high strength and stability; slow permeability in subsoil.	Moderate permeability; natural drainage fairly adequate for most crops.	Moderate water-holding capacity; moderate to high infiltration rate.	Not needed-----	No hazard.
Slow seepage-----	Moderate strength and stability; slow permeability.	Seasonally high water table; slow permeability.	Moderate water-holding capacity; low to moderate infiltration rate.	Not needed-----	No hazard.
Slow seepage-----	Moderate strength and stability; moderate to slow permeability.	Moderate to slow permeability.	Moderate water-holding capacity; moderate to slow infiltration rate.	Not needed-----	No hazard.
Moderate to slow seepage.	Moderate to high strength and stability; moderate permeability.	Not needed-----	Moderate water-holding capacity; moderate infiltration rate.	Not needed-----	No hazard.
Excessive seepage-	Low to moderate strength and stability; rapid permeability.	Not needed-----	Low water-holding capacity; rapid infiltration rate.	Not needed-----	No hazard.
Excessive seepage-	Low strength and stability; rapid permeability.	Not needed-----	Low water-holding capacity; rapid infiltration rate.	Not needed-----	No hazard.
Slow seepage-----	Moderate strength and stability; slow permeability.	Slow permeability; plastic clayey subsoil.	Moderate water-holding capacity; slow infiltration rate.	Not needed-----	No hazard.
Slow to moderate seepage.	Moderate strength and stability; moderate permeability.	Seasonally high water table; moderate permeability.	Moderate water-holding capacity; moderate infiltration rate.	Not needed-----	No hazard.

TABLE 6.—*Interpretations of engineering*

Soil series and map symbol	Suitability for—			Suitability as a source of—		Suitability for sewage disposal
	Winter grading	Road subgrade	Road fill	Topsoil	Sand	
Magnolia (MaA, MaB2).	Good.....	Fair to good....	Fair to good	Good.....	Unsuitable . . .	Good.....
Marlboro (MbA, MbB, MbB2, MbC2).	Good.....	Fair to good....	Fair to good..	Good.....	Unsuitable.....	Good.....
Myatt (My).....	Poor ¹	Poor to fair....	Poor to fair .	Poor.....	Unsuitable.....	Very poor; high water table much of the time. ¹
Norfolk (NfA, NoA, NoB, NoB2, NoC, NoC2, NtA, NtB, NtC).	Good.....	Fair to good....	Fair to good..	Good.....	Fair; ² poorly graded sands.	Good.....
Okenee (Ok).....	Poor ¹	Organic material unsuitable.	Poor to unsuitable. ³	Poor.....	Unsuitable.....	Very poor; high water table most of the time. ¹
Orangeburg (OrA, OrB, OrB2, OrC2).	Good.....	Fair to good....	Fair to good..	Good.....	Unsuitable.....	Good.....
Plummer (Pm, Pn)...	Poor to fair ¹ ..	Fair; good if confined.	Fair.....	Poor.....	Fair; poorly graded fine sands; high water table.	Very poor; high water table much of the time. ¹
Portsmouth (Po, Ps).	Poor ¹	Organic material unsuitable.	Poor to unsuitable. ³	Poor to fair...	Unsuitable.....	Very poor; slow to moderate permeability; high water table most of the time. ¹
Rains (Ra).....	Poor ¹	Fair.....	Fair.....	Fair.....	Unsuitable . . .	Very poor; high water table most of the time. ¹
Ruston (RsA, RsB, RsB2, RsC, RsC2, RtA, RtB, RtC).	Good.....	Fair to good....	Fair to good..	Fair to good..	Fair; ² poorly graded sands.	Good.....
Rutlege (Ru).....	Poor ¹	Fair to unsuitable. ³	Fair to unsuitable. ³	Poor.....	Fair; poorly graded fine sands.	Very poor; rapid permeability; high water table most of the time. ¹
Vaughn (VaB, VaB2, VaC, VaC2, VaD, VaD2, VaE2, VtB, VtD, VyC3).	Good.....	Fair to good....	Fair to good..	Fair.....	Fair; ² poorly graded sands.	Fairly good; subsoil slowly permeable.
Wahee (Wa).....	Poor ¹	Poor.....	Poor.....	Poor to fair...	Unsuitable.....	Poor; slowly permeable subsoil; high water table at times. ¹
Wehadkee (We).....	Poor ¹	Poor.....	Poor.....	Fair to good..	Unsuitable.....	Very poor; high water table ¹ ; subject to overflow.

¹ Water table less than 15 inches below the surface.² Rating of fair applies to thick surface phases; normal phases are generally poor.

properties of the soils—Continued

Soil features affecting engineering practices					
Farm ponds		Agricultural drainage	Irrigation	Terraces and diversions	Waterways
Reservoir area	Embankment				
Slow seepage in subsoil.	Moderate to high strength and stability; slow permeability in subsoil.	Not needed.....	Moderate water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Slow seepage in subsoil.	Moderate to high strength and stability; slow permeability in subsoil.	Not needed.....	Moderate water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Slow to moderate seepage in subsoil.	Low to moderate strength and stability; moderate permeability in subsoil.	High water table; moderate permeability.	Moderate water-holding capacity; moderate infiltration rate.	Not needed.....	No hazard.
Slow to moderate seepage.	Moderate to high strength and stability; slow to moderate permeability.	Not needed.....	Moderate water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Slow seepage in subsoil.	Organic material unsuitable.	High water table; moderate to slow permeability.	Moderate to high water-holding capacity; moderate infiltration rate.	Not needed.....	No hazard.
Slow to moderate seepage.	Moderate to high strength and stability; moderate to slow permeability.	Not needed.....	Moderate water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Moderate seepage in subsoil.	Low strength and stability.	High water table; moderate permeability; poor agricultural soil.	Low water-holding capacity.	Not needed.....	No hazard.
Slow to moderate permeability in subsoil.	Organic material unsuitable.	High water table; moderate permeability in subsoil.	Moderate to high water-holding capacity; moderate infiltration rate.	Not needed.....	No hazard.
Slow to moderate seepage.	Moderate strength and stability; moderate permeability.	Seasonally high water table; moderate permeability.	Moderate water-holding capacity; moderate infiltration rate.	Not needed.....	No hazard.
Slow to moderate seepage.	Moderate to high strength and stability; moderate permeability.	Not needed.....	Moderate water-holding capacity; moderate infiltration rate.	Slopes of 2 percent or more are erodible.	Slopes of 2 percent or more are erodible.
Rapid seepage in subsoil.	Low strength and stability; rapid permeability.	High water table; rapid permeability; sand below depth of 12 inches.	Moderate water-holding capacity; moderate infiltration rate.	Not needed.....	No hazard.
Slow to rapid seepage.	Moderate to high strength and stability; slow to rapid permeability.	Not needed.....	Low water-holding capacity; moderate infiltration rate.	Highly erodible...	Highly erodible.
Slow seepage.....	Low strength and stability; slow permeability.	Slow permeability; high water table at times.	Moderate water-holding capacity; slow infiltration rate.	Not needed.....	No hazard.
Slow seepage.....	Low strength and stability; slow permeability.	Slow permeability; subject to overflow; high water table.	High water-holding capacity; slow infiltration rate.	Not needed.....	No hazard.

³ Peat or highly organic layers are unsuitable.

TABLE 7.—*Engineering test data*¹ for

Soil and location	Parent material	Bureau of Public Roads report number	Depth	Horizon
			<i>Inches</i>	
Grady loam: 2 miles south of Ashland (modal profile).	Coastal Plain sediments-----	S38157----- S38158----- S38159-----	0 to 10----- 14 to 25----- 28 to 72-----	A ₁ B ₂ C
Leaf fine sandy loam: 8 miles northeast of Bishopville (modal profile).	Coastal Plain sediments .	S38160----- S38161----- S38162-----	2 to 10----- 10 to 28----- 28 to 36-----	A ₂ B ₂ C
Lynchburg sandy loam: 3 miles south of Lynchburg (modal profile).	Coastal Plain sediments-----	S38163----- S38164----- S38165-----	0 to 15----- 19 to 41----- 41 to 50-----	A ₁ B _{2g} C _g
Marlboro loamy sand: 3 miles southwest of Bishopville (modal profile).	Coastal Plain sediments ..	S38166----- S38167----- S38168-----	0 to 8----- 8 to 36----- 36 to 72-----	A _p B ₂ C
Rains loamy sand: 3 miles southwest of Lucknow (modal profile).	Coastal Plain sediments-----	S38169----- S38170----- S38171-----	0 to 12----- 21 to 28----- 28 to 46-----	A ₁ B _{2g} C _g

¹ Tests performed by the Bureau of Public Roads in accordance with standard procedures of the American Association of State Highway Officials (AASHO) (1).

² Mechanical analyses according to the American Association of State Highway Officials Designation: T 88 (1). Results by this procedure may differ somewhat from results that would have been

obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey pro-

soil samples taken from five soil profiles

Mechanical analysis ²							Liquid limit	Plas- ticity index	Classification	
Percentage passing sieve—			Percentage smaller than—						AASHO ³	Unified ⁴
No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	0.05 mm.	0.02 mm.	0.005 mm.	0.002 mm.				
100	89	42	35	28	20	15	Percent (⁵)	Percent (⁵)	A-4(1) _ _ _	SM.
100	89	42	34	28	26	23	24	9	A-4(1) _ _ _ _ _	SC.
100	91	59	55	49	42	37	47	20	A-7-6(10) _ _ _	ML-CL.
100	92	74	69	48	24	15	(⁵)	(⁵)	A-4(8) _ _ _ _ _	ML.
100	96	85	81	65	47	38	40	19	A-6(12) _ _ _ _ _	CL.
100	97	88	84	70	53	45	49	23	A-7-6(15) _ _ _	ML-CL.
100	78	52	48	31	14	10	(⁵)	(⁵)	A-4(3) _ _ _ _ _	ML.
100	78	56	52	43	30	26	33	16	A-6(7) _ _ _ _ _	CL.
100	78	58	54	44	32	27	38	19	A-6(8) _ _ _ _ _	CL.
100	79	31	24	19	10	7	(⁵)	(⁵)	A-2-4(0) _ _ _ _ _	SM.
100	86	58	54	50	43	39	38	17	A-6(7) _ _ _ _ _	CL.
100	87	54	49	45	41	40	(⁵)	(⁵)	A-4(4) _ _ _ _ _	ML.
100	92	54	50	38	27	21	45	9	A-5(4) _ _ _ _ _	ML.
100	81	33	28	21	18	15	(⁵)	(⁵)	A-2-4(0) _ _ _	SM.
100	83	30	26	21	16	13	(⁵)	(⁵)	A-2-4(0) _ _ _ _	SM.

cedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soils.

³ Based on AASHO Designation: M 145-49. The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes (1).

⁴ Based on the Unified Soil Classification System (10).

⁵ Nonplastic.

Descriptions of the Soils

Soils in 28 different series, and also 5 miscellaneous land types, were mapped in Lee County. These are described in alphabetical order in this section. Following the general description of each series is a description of a generalized profile of a soil in that series. Each of the soils in the series is compared to the soil for which a profile is described, and additional information about each soil is given. Additional information about the use and management of each soil is given in the section "Use and Man-

agement of the Soils." A more complete and technical description of a profile of a soil in each of the series is given in the section "Formation, Morphology, and Classification of the Soils."

Table 8 gives the approximate acreage and proportionate extent of each of the soils and land types in Lee County. The detailed soil map in the back of this report shows the location and distribution of the different soils. Technical terms used in the descriptions are defined in the Glossary.

TABLE 8.—Approximate acreage and proportionate extent of the soils

Soil	Acrea	Extent	Soil	Acrea	Extent
		Percent (¹)			Percent
Borrow pits.....	11		Norfolk loamy sand, 2 to 6 percent slopes.....	10,984	4.2
Cahaba sandy loam.....	251	0.1	Norfolk loamy sand, 2 to 6 percent slopes, eroded.....	1,212	.5
Coxville loam.....	13,503	5.2	Norfolk loamy sand, 6 to 10 percent slopes.....	331	.1
Coxville sandy loam.....	7,420	2.8	Norfolk loamy sand, 6 to 10 percent slopes, eroded.....	341	.1
Dunbar sandy loam.....	8,641	3.3	Norfolk loamy sand, thick surface, 0 to 2 per- cent slopes.....	3,811	1.5
Eustis sand, 0 to 6 percent slopes.....	1,185	.4	Norfolk loamy sand, thick surface, 2 to 6 per- cent slopes.....	5,353	2.0
Eustis sand, shallow, 0 to 2 percent slopes.....	666	.2	Norfolk loamy sand, thick surface, 6 to 10 per- cent slopes.....	811	.3
Eustis sand, shallow, 2 to 6 percent slopes.....	1,411	.5	Okence loam.....	3,984	1.5
Eustis sand, shallow, 6 to 10 percent slopes.....	294	.1	Orangeburg loamy sand, 0 to 2 percent slopes.....	442	.2
Faceville loamy sand, 0 to 2 percent slopes.....	1,928	.7	Orangeburg loamy sand, 2 to 6 percent slopes.....	554	.2
Faceville loamy sand, 2 to 6 percent slopes.....	704	.3	Orangeburg loamy sand, 2 to 6 percent slopes, eroded.....	712	.3
Faceville loamy sand, 2 to 6 percent slopes, eroded.....	1,117	.4	Orangeburg loamy sand, 6 to 10 percent slopes, eroded.....	582	.2
Faceville loamy sand, 6 to 10 percent slopes, eroded.....	263	.1	Plummer loamy sand.....	668	.3
Gilead loamy sand, 0 to 2 percent slopes.....	689	.3	Plummer sand, terrace.....	263	.1
Gilead loamy sand, 2 to 6 percent slopes.....	8,553	3.3	Portsmouth loam.....	3,209	1.2
Gilead loamy sand, 2 to 6 percent slopes, eroded.....	1,718	.7	Portsmouth sandy loam.....	980	.4
Gilead loamy sand, 6 to 10 percent slopes.....	4,811	1.8	Rains loamy sand.....	837	.3
Gilead loamy sand, 6 to 10 percent slopes, eroded.....	5,171	2.0	Ruston loamy sand, 0 to 2 percent slopes.....	2,052	.8
Gilead loamy sand, 10 to 15 percent slopes.....	1,021	.4	Ruston loamy sand, 2 to 6 percent slopes.....	2,547	1.0
Gilead loamy sand, 10 to 15 percent slopes, eroded.....	1,434	.5	Ruston loamy sand, 2 to 6 percent slopes, eroded.....	1,467	.6
Gilead loamy sand, thick surface, 2 to 6 per- cent slopes.....	3,464	1.3	Ruston loamy sand, 6 to 10 percent slopes.....	126	(¹)
Gilead loamy sand, thick surface, 6 to 10 per- cent slopes.....	1,734	.7	Ruston loamy sand, 6 to 10 percent slopes, eroded.....	741	.3
Goldsboro loamy sand.....	6,357	2.4	Ruston loamy sand, thick surface, 0 to 2 percent slopes.....	812	.3
Grady loam.....	3,237	1.2	Ruston loamy sand, thick surface, 2 to 6 percent slopes.....	1,667	.6
Grady sandy loam.....	1,732	.7	Ruston loamy sand, thick surface, 6 to 10 percent slopes.....	349	.1
Gullied land.....	179	.1	Rutledge loamy sand.....	967	.4
Izagara sandy loam.....	2,867	1.1	Swamp.....	17,103	6.5
Kalmia loamy sand.....	1,399	.5	Vaughn loamy sand, 2 to 6 percent slopes.....	368	.1
Kalmia loamy sand, thick surface.....	731	.3	Vaughn loamy sand, 2 to 6 percent slopes, eroded.....	234	.1
Lakeland sand, 0 to 6 percent slopes.....	15,484	5.9	Vaughn loamy sand, 6 to 10 percent slopes.....	1,050	.4
Lakeland sand, 6 to 15 percent slopes.....	3,986	1.5	Vaughn loamy sand, 6 to 10 percent slopes, eroded.....	2,169	.8
Lakeland sand, shallow, 0 to 2 percent slopes.....	2,755	1.0	Vaughn loamy sand, 10 to 15 percent slopes.....	695	.3
Lakeland sand, shallow, 2 to 6 percent slopes.....	2,127	.8	Vaughn loamy sand, 10 to 15 percent slopes, eroded.....	1,017	.4
Lakeland sand, shallow, 6 to 10 percent slopes.....	533	.2	Vaughn loamy sand, 15 to 25 percent slopes, eroded.....	140	(¹)
Lakeland sand, terrace, 0 to 6 percent slopes.....	933	.4	Vaughn loamy sand, thick surface, 2 to 6 percent slopes.....	170	.1
Lakewood sand, 0 to 10 percent slopes.....	1,332	.5	Vaughn loamy sand, thick surface, 6 to 15 percent slopes.....	778	.3
Leaf fine sandy loam.....	1,808	.7	Vaughn sandy loam, 6 to 10 percent slopes, severely eroded.....	172	.1
Local alluvial land.....	2,049	.8	Wahce fine sandy loam.....	936	.4
Lynchburg sandy loam.....	22,397	8.6	Wehadkee silt loam.....	6,703	2.6
Magnolia loamy sand, 0 to 2 percent slopes.....	435	.2			
Magnolia loamy sand, 2 to 6 percent slopes, eroded.....	134	(¹)	Total.....	261,760	100.0
Marlboro loamy sand, 0 to 2 percent slopes.....	18,339	7.0			
Marlboro loamy sand, 2 to 6 percent slopes.....	1,759	.7			
Marlboro loamy sand, 2 to 6 percent slopes, eroded.....	1,033	.4			
Marlboro loamy sand, 6 to 10 percent slopes, eroded.....	144	.1			
Mixed alluvial land.....	4,537	1.7			
Myatt sandy loam.....	5,692	2.2			
Norfolk loamy fine sand, 0 to 2 percent slopes.....	933	.4			
Norfolk loamy sand, 0 to 2 percent slopes.....	15,522	5.9			

¹ Less than 0.1 percent.

Borrow Pits

Borrow pits (8p).—This miscellaneous land type consists of areas from which gravel or soil material has been removed for use in building roads. On some areas there are a few pines that have reseeded naturally. The areas that have no plant cover should be planted to pine trees, kudzu, or Coastal bermudagrass. Some of the deeper pits contain water and can be used for irrigation pits or can be stocked with fish. (Capability unit VII-2; woodland suitability group 12)

Cahaba Series

Soils in the Cahaba series are deep, nearly level to gently sloping, and well drained. They formed in materials washed from the soils of the Coastal Plain and the Piedmont Plateau. The native vegetation was a forest of long-leaf pine, loblolly pine, some red oak and sweetgum, and an understory of shrubs.

The surface layer is brown to light yellowish brown, very friable, and 12 to 18 inches thick. The subsoil is yellowish-red, friable sandy clay loam.

Cahaba soils are brown to yellowish red, whereas the nearby Kalmia soils are yellow to yellowish brown. Cahaba soils are less sandy and less yellow than the nearby terrace phases of Lakeland soils.

The natural fertility and the organic-matter content of Cahaba soils are moderate. Permeability is moderate, and the rate of infiltration is moderate. The reaction is medium acid to strongly acid.

In Lee County, soils in the Cahaba series occur in small areas on the highest part of the Lynches River terrace. They are well suited to most of the crops commonly grown in the county. Their total acreage is not large, and most of it is cropped.

Cahaba sandy loam (Ca).—This well-drained, nearly level soil is on the Lynches River terrace.

Profile—

0 to 13 inches, brown, very friable sandy loam that grades to light yellowish brown below a depth of 6 inches.

13 to 34 inches, yellowish-red, friable sandy clay loam; breaks to irregular blocks with rounded edges; when wet soil is rubbed, it leaves a coating of light-colored chalky clay on the fingers.

34 inches +, red and brown sandy clay and sandy clay loam.

Most areas of this soil have a slope of 0 to 2 percent, but a few areas have a slope of 2 to 6 percent. The surface layer is 12 to 18 inches thick. The color of the subsoil ranges from strong brown to yellowish red, and in a few places the texture is sandy clay. In some places sand occurs at a depth of 36 to 60 inches.

Cahaba sandy loam is suited to cotton, corn, tobacco, soybeans, and small grains. Coastal bermudagrass, bahia-grass, and sericea lespedeza are suitable plants for hay and pasture.

Although most of the fields of this soil are small, mechanized farming is possible. Under good management, row crops can be grown each year. This soil cannot be tilled so soon after a rain, however, as some of the upland soils, and it gets a hard crust in dry periods. (Capability unit I-1; woodland suitability group 2)

Coxville Series

Soils in the Coxville series are deep, nearly level, and poorly drained. They formed in beds of unconsolidated, acid sands and clays. The native vegetation consisted of loblolly pine, pond pine, sweetgum, blackgum, red oak, gallberry, and sumac.

The very dark gray surface layer is about 7 inches thick. The subsoil is gray, mottled, plastic silty clay.

Coxville soils are more poorly drained than the associated Lynchburg soils and have a finer textured, grayer subsoil. They are more poorly drained than the nearby Dunbar soils, which have a gray subsoil that is mottled with red and brown.

Coxville soils are moderately fertile and contain a moderate amount of organic matter. They are slowly permeable, have a slow infiltration rate, and have a moderate available moisture capacity. They are acid throughout. If drained, they can be cropped intensively. They are suited to a wide variety of crops.

In Lee County, Coxville soils occur both on broad upland flats that lie below the Sand Hills and in the depressions that are known locally as Carolina bays. They are widely distributed throughout the county and constitute about 8 percent of the total acreage. A little less than a third of their acreage is cultivated. Loblolly pine, pond pine, and hardwoods grow on the areas not in cultivation.

Coxville loam (Cx).—This poorly drained soil is on broad flats or depressed areas, mostly south and east of U.S. Highway No. 15.

Profile—

0 to 7 inches, very dark gray loam that crumbles easily when moist.

7 to 32 inches, gray sandy clay mottled with yellowish brown; red mottles below a depth of 17 inches; crumbles to small, sharp, irregular pieces.

32 to 46 inches +, gray, massive silty clay that grades to sandy clay; brown and red mottles increase with depth.

The surface layer is 6 to 14 inches thick. Where the soil has been cultivated for a number of years, the surface layer is dark gray. In a few places the subsoil is sandy clay loam, and in some places it contains no red mottles.

This soil must be drained before it can be cultivated or used for pasture. Drainage can be improved by open ditches. If there are suitable outlets, tile can be used. In many places in the Carolina bays, however, it is difficult to locate suitable outlets. Coxville loam cannot be cultivated so soon after rains as nearby better drained soils, and it puddles easily if livestock are allowed to graze during rainy periods.

If drained, this soil is well suited to corn, small grains, soybeans, and truck crops. Dallisgrass, tall fescue, bermudagrass, whiteclover, and annual lespedeza are among the better suited hay and pasture plants. Crop and pasture yields are high under good management.

If fertilizer is used and large amounts of crop residues are turned under, row crops can be grown each year. Lime is needed for most field crops and for pastures. The soil should be tested every 3 or 4 years to determine the amount of lime required. This soil provides good sites for excavated irrigation pits. (Capability unit IIIw-2; woodland suitability group 5)

Coxville sandy loam (Co).—The subsoil in this nearly level soil is commonly sandy clay loam. If adequately drained, this soil is well suited to cultivated crops. It is more easily tilled and drained than Coxville loam. (Capability unit IIIw-2; woodland suitability group 5)

Dunbar Series

Soils in the Dunbar series are deep, somewhat poorly drained, and nearly level. They formed in beds of unconsolidated, acid sands and clays. The native vegetation consisted of longleaf pine, loblolly pine, sweetgum, and a few oaks.

The surface layer is gray to dark-gray sandy loam. It is 12 to 18 inches thick. The subsoil is gray mottled with brown and red. In the Dunbar soils that are near Marlboro and Faceville soils, the subsoil is sandy clay; elsewhere, it ranges from sandy clay loam to sandy clay.

Dunbar soils lie between the moderately well drained Goldsboro soils and the poorly drained Coxville soils. They are similar to Coxville soils in texture, but they are finer textured than Goldsboro soils. They have a finer textured subsoil than the somewhat poorly drained Lynchburg soils.

These soils contain a moderate amount of organic matter and have a moderate natural supply of plant nutrients. They are acid. They have a moderate infiltration rate and a moderate available moisture capacity. Permeability is moderately slow to slow. If an adequate drainage system is installed, moisture conditions are good.

Dunbar soils are among the most productive in Lee County. They occupy a little more than 3 percent of the total area. Most of their acreage is cultivated.

Dunbar sandy loam (Du).—This nearly level, somewhat poorly drained soil responds well to drainage.

Profile—

0 to 12 inches, dark-gray, very friable sandy loam.

12 to 34 inches, light brownish-gray to gray sandy clay loam mottled with yellowish brown and strong brown; breaks easily to irregular lumps with rounded edges.

34 inches +, gray sandy clay loam mottled with yellowish brown and, to some extent, strong brown and red; a few soft concretions; no apparent structure or breakage lines as in layer above.

Included are a few moderately well drained areas in which the surface layer is gray rather than dark gray and is 12 to 18 inches thick.

This soil needs to be drained, either by open ditches or by tile, before it can be used for crops and pasture. It cannot be tilled so soon after a rain as the better drained Norfolk soils, but it can be tilled sooner than the nearby Coxville soils. If needed, additional moisture can be supplied by sprinkler irrigation. There are some good sites for excavated irrigation pits.

Under good management, which includes adequate drainage, this soil is among the most productive in the county. It is well suited to cotton, corn, tobacco, soybeans, small grains, and truck crops. It is also well suited to dallisgrass, tall fescue, annual lespedeza, bahiagrass, vetch, bermudagrass, and whiteclover for hay and pasture. Yields of all crops are high, and yields of tobacco are among the highest in the county. Lime is required for most crops. If an adequate amount of fertilizer is used and a high organic-matter content is maintained, row

crops can be grown each year. (Capability unit IIw-2; woodland suitability group 6)

Eustis Series

Soils in the Eustis series are deep, gently sloping to sloping, and excessively drained. They formed in thick beds of unconsolidated sands. The native vegetation was a forest of longleaf pine and loblolly pine and an understory of scrub oak.

The surface layer is gray to pale brown. The subsoil is brown to red sand. In texture, these soils are similar to the associated coarse-textured Lakeland soils, but they differ in the color of the subsoil. In Lakeland soils, the subsoil is yellow to yellowish brown.

The organic-matter content and the supply of plant nutrients are both low. The reaction is strongly acid. These soils are not productive. Deep-rooted plants, such as sericea lespedeza, grow fairly well but are hard to establish.

In Lee County, soils in the Eustis series occur mostly north and west of U.S. Highway No. 15, but they also occur in small areas in other parts of the county. They constitute only a little more than 1 percent of the total acreage. Most of their acreage is idle or in timber. Although most of the wooded areas are covered by scrub oak and scattered longleaf pines, a few areas are fully stocked with pine. Only a few nearly level areas are cropped.

Eustis sand, 0 to 6 percent slopes (E8B).—This droughty sandy soil occurs on the uplands.

Profile—

0 to 14 inches, light-gray, loose sand.

14 to 34 inches, reddish-yellow, loose sand with ½-inch bands of strong-brown sandy loam.

34 to 64 inches, reddish-yellow loamy sand; structureless; many fine mica flakes.

64 inches +, yellowish-red and white sand with pockets of strong-brown loamy sand.

A few small areas of colluvial material are included. In many places there are bands of strong-brown sandy loam in the 14- to 34-inch layer. In a few places the surface layer is loamy sand. The subsoil is strong-brown to yellowish-red sand or loamy sand.

This soil can be cultivated soon after a rain, and it does not become hard when dry. The content of organic matter and the supply of plant nutrients are low. Added amounts of these materials are leached from the soil quickly, especially if the soil is cropped. Permeability is rapid, and the available moisture capacity is low. The risk of wind erosion is severe in cultivated fields during the windy part of spring.

Watermelons, corn, rye, peaches, and velvetbeans are the main crops. Sericea lespedeza, bahiagrass, and Coastal bermudagrass generally are grown for hay and pasture. If a large amount of organic matter is added and fertilizer is applied frequently, yields are fair. Windbreaks planted at right angles to the prevailing winds will help to control wind erosion. Scrub oak must be controlled before pine can become established. (Capability unit IVs-1; woodland suitability group 1)

Eustis sand, shallow, 0 to 2 percent slopes (EsA).—In this soil, sandy loam or sandy clay loam occurs at a depth of 30 to 36 inches. The surface layer is sand or loamy sand. The available moisture capacity is slightly higher

than that of Eustis sand, 0 to 6 percent slopes, and permeability is not so rapid.

The principal crops are cotton, corn, watermelons, rye, oats, peaches, and cowpeas. If a large amount of fertilizer is applied and if a cover crop is turned under 1 year in every 2 years, yields of these crops are fair. Yields of sericea lespedeza, which is grown for hay or pasture, are good. Under good management, yields of bahiagrass and Coastal bermudagrass are fair to good. (Capability unit IIIs-1; woodland suitability group 1)

Eustis sand, shallow, 2 to 6 percent slopes (EsB).—This soil is finer textured throughout than Eustis sand, 0 to 6 percent slopes. The sand to loamy sand surface layer is underlain by sandy loam or sandy clay loam at a depth of 30 to 36 inches.

In use and in management requirements, this soil is similar to Eustis sand, 0 to 6 percent slopes. Because of its greater capacity to hold plant nutrients and water, however, it is more productive. (Capability unit IIIs-1; woodland suitability group 1)

Eustis sand, shallow, 6 to 10 percent slopes (EsC).—Because of the stronger slope, this soil is more droughty than the less sloping phases of Eustis sand, shallow, and is more likely to erode. It is finer textured throughout than Eustis sand, 0 to 6 percent slopes; the material below a depth of 30 to 36 inches is sandy loam or sandy clay loam.

Watermelons, rye, corn, cowpeas, and sericea lespedeza are the principal crops. If this soil is used for row crops, a close-growing crop should be seeded 3 years in every 4 years. Sericea lespedeza, bahiagrass, and Coastal bermudagrass are suitable hay and pasture plants, but yields are low. (Capability unit IVs 1; woodland suitability group 1)

Faceville Series

The Faceville series consists of deep, well-drained, nearly level to sloping, friable soils that developed in thick beds of moderately fine textured, acid, marine sediments. Originally, they were covered by a forest of longleaf pine, loblolly pine, a few oaks, and an understory of brush and shrubs.

The grayish-brown surface layer contains a moderate amount of organic matter. The subsoil is friable, slightly sticky, strong-brown to yellowish-red sandy clay. The soils are medium acid to strongly acid.

Faceville soils are associated with Magnolia, Marlboro, and Ruston soils. They occur at a lower elevation than Magnolia soils but at a higher elevation than Marlboro soils. They are similar to Magnolia and Marlboro soils in texture, but they have a redder subsoil than Marlboro soils and a less red subsoil than Magnolia soils. Faceville soils are finer textured than Ruston and Orangeburg soils and have a thinner surface layer.

These soils are suited to most of the locally grown commercial crops. They occupy a little over 1.5 percent of the total area of Lee County. Most of their acreage is cultivated. All but the more sloping areas are well suited to mechanized farming.

Faceville loamy sand, 0 to 2 percent slopes (FaA).—This deep, nearly level, well-drained soil occurs on the uplands throughout the county.

Profile—

- 0 to 9 inches, dark grayish-brown, very friable loamy sand; abrupt lower boundary.
- 9 to 40 inches, yellowish-red, friable sandy clay; slightly sticky when wet; crumbles easily to medium-sized lumps with rounded edges.
- 40 to 46 inches, yellowish-red sandy clay loam; less sticky than the layer above.
- 46 inches. +, red sandy clay loam and sandy loam splotched with red and strong brown.

The surface layer is 6 to 12 inches thick. In some places it is sandy loam. If the organic-matter content is low, the surface layer is grayish brown rather than dark grayish brown. The subsoil is strong brown to yellowish red, and in some places it is clay loam or heavy sandy clay loam.

This soil is moderately fertile, and it contains a moderate amount of organic matter. The infiltration rate is moderate, permeability is moderate, and the available moisture capacity is high. Tilth is good.

This soil is well suited to mechanized farming, and it responds well to good management, including adequate fertilization. It is suited to most of the crops grown commercially in the county. Under the proper management, it can be cropped intensively. Most of the acreage is cultivated. (Capability unit I-2; woodland suitability group 4)

Faceville loamy sand, 2 to 6 percent slopes (FaB).—Because of its gentle slope, good tilth, and favorable moisture conditions, this soil is well suited to the crops commonly grown in the county. Under good management, including adequate fertilization, it is productive. Most fields are large, and mechanized farming is feasible. Erosion is a greater hazard than on Faceville loamy sand, 0 to 2 percent slopes, because of the moderate rate of runoff. Some control measures generally are needed. Under good management, it is possible to use a rotation of a close-growing crop for 1 year and a row crop the next year. (Capability unit IIe-2; woodland suitability group 4)

Faceville loamy sand, 2 to 6 percent slopes, eroded (FaB2).—This soil has a browner and thinner surface layer than Faceville loamy sand, 0 to 2 percent slopes. It is suited to the same crops, but yields are not so high. Because of its stronger slope, it is more likely to erode. Under good management, it is possible to use a rotation of a close-growing crop for 1 year and a row crop the next year. Almost all the acreage is cropped. (Capability unit IIe-2; woodland suitability group 4)

Faceville loamy sand, 6 to 10 percent slopes, eroded (FaC2).—This soil has a browner and thinner surface layer than Faceville loamy sand, 0 to 2 percent slopes. Most areas are small in size. A few areas have a slope of 10 to 15 percent. The total acreage is small.

This soil is suited to most of the locally grown crops. Even under the same management, however, yields are lower than on Faceville loamy sand, 0 to 2 percent slopes. Because of its steeper slope, this soil is less well suited to mechanized farming. Erosion is a greater hazard. The infiltration rate is slower, and the surface layer gets hard and cloddy during dry periods. A rotation consisting of a close-growing crop for 2 years and a row crop for 1 year helps to control erosion. (Capability unit IIIe-2; woodland suitability group 4)

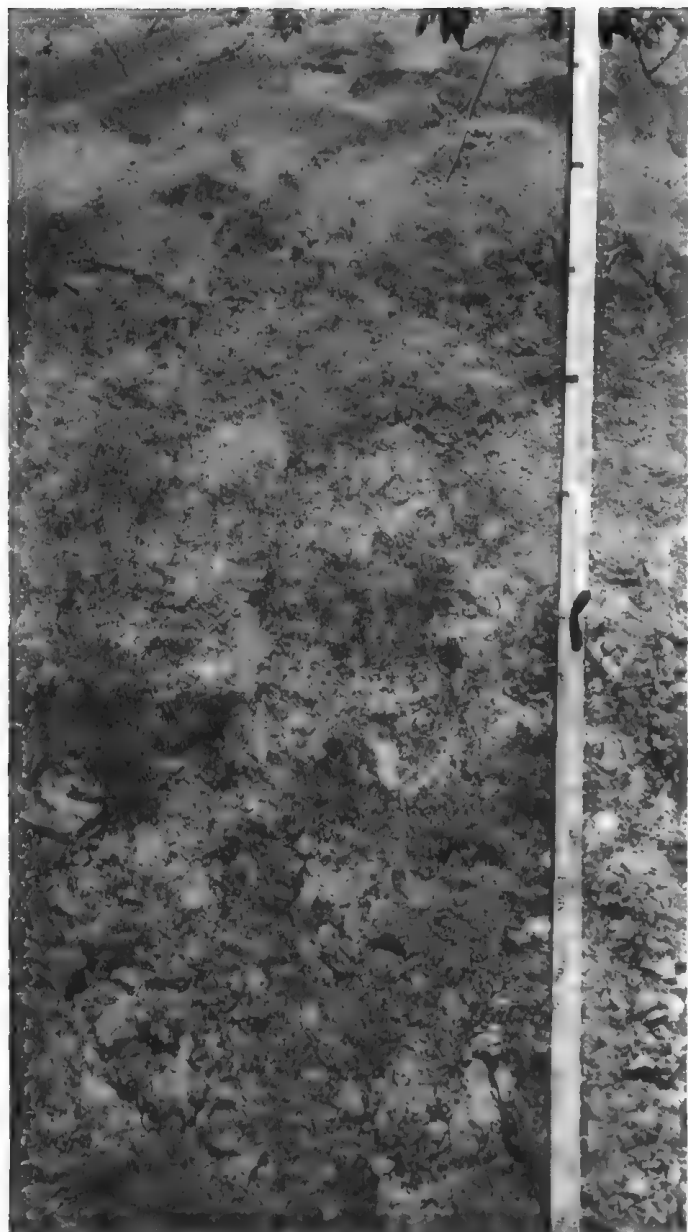


Figure 10.—Profile of Gilead loamy sand, 2 to 6 percent slopes.

Gilead Series

Soils in the Gilead series are moderately deep and nearly level to strongly sloping. Because of the hard, compact layer in their subsoil, they are only moderately well drained. They developed in beds of unconsolidated sands and clays. The native vegetation was a forest of longleaf pine, loblolly pine, and scrub oak.

The grayish-brown surface layer generally is 10 to 14 inches thick, but it may be as much as 18 inches thick. Thick surface phases are recognized where the surface layer is more than 18 inches thick. The subsoil is brownish-yellow sandy clay loam. At a depth of 20 to 24 inches, the sandy clay loam is heavier and is compact and brittle.

Gilead soils generally occur on the low ridgetops and at the base of slopes below Lakeland and Vacluse soils.

Their subsoil is a paler, duller yellow than the subsoil in Norfolk soils, and it contrasts with the red subsoil of Ruston and Vacluse soils. Furthermore, the subsoil contains a compact layer that is absent in the subsoil of Norfolk and Ruston soils. Generally, however, this compact layer is less pronounced than the compact layer in the subsoil of Vacluse soils.

These soils have a low organic-matter content and a low supply of plant nutrients. They are medium acid to strongly acid. In some places, fragments of sandstone and quartz occur on the surface, but they are not numerous enough to interfere with cultivation. The nearly level and gently sloping soils are suited to cultivated crops, but their compact layer limits productivity.

Gilead soils occur mainly in the Sand Hills. They make up about 11 percent of Lee County. About half the acreage is now cultivated, and the remainder is in cutover pine and scrub oak.

Gilead loamy sand, 0 to 2 percent slopes (GeA).—This moderately permeable to slowly permeable soil occurs on uplands throughout the county, but the total acreage is small.

Profile—

- 0 to 13 inches, grayish-brown, loose loamy sand.
- 13 to 22 inches, brownish-yellow, friable sandy clay loam; breaks easily to medium-sized lumps with rounded edges.
- 22 to 29 inches, mottled, brownish-yellow and reddish-yellow heavy sandy clay loam; compact and brittle.
- 29 to 34 inches +, brownish-yellow, strong-brown, red, and yellow sandy clay loam; compact and brittle; compaction increases with depth; some mica flakes.

The surface layer, which is 12 to 18 inches thick, contains pockets of highly bleached sand. Ordinarily its texture is loamy sand, but in a few places it is sandy loam. The depth at which the subsoil is compact ranges from 20 to 36 inches but generally is 20 to 24 inches.

This soil has a low organic-matter content and a low supply of plant nutrients. It is medium acid to strongly acid. Permeability is moderate to slow, and the infiltration rate is moderate. The available moisture capacity is moderate. The compact layer limits somewhat the development of roots. This soil has good tilth, and it can be worked throughout a wide range of moisture content.

Oats, cotton, corn, velvetbeans, and cowpeas are among the better suited crops. Bahiagrass, sericea lespedeza, bermudagrass, and crimson clover are suitable hay and pasture plants. Under good management, yields are fair to good, but productivity is limited somewhat by the compact subsoil. (Capability unit IIs-2; woodland suitability group 2)

Gilead loamy sand, 2 to 6 percent slopes (GeB).—The compact layer is a little closer to the surface in this soil (fig. 10) than in Gilead loamy sand, 0 to 2 percent slopes. Some measures are needed to control water erosion, particularly on the more sloping areas. In general, good management requires that row crops be grown no more often than 1 year in every 2 years. This is the most extensive of the Gilead soils in the county. (Capability unit IIe-4; woodland suitability group 2)

Gilead loamy sand, 2 to 6 percent slopes, eroded (GeB2).—This soil has lost from one-fourth to three-fourths of its original surface layer. In some areas the surface layer is sandy loam rather than loamy sand. On the steeper slopes at the edges of fields and directly below

the old benchlike terraces, the subsoil is exposed in patches. There are a few shallow gullies.

Special measures are needed to control erosion in cultivated fields. Row crops commonly cannot be grown more often than 1 year in every 3 years. Good management also includes adequate fertilization and turning under all crop residues. This soil is suited to the same crops as Gilead loamy sand, 0 to 2 percent slopes. (Capability unit IIIe-4; woodland suitability group 2)

Gilead loamy sand, 6 to 10 percent slopes (GeC).—This soil is more droughty and more subject to erosion than the less sloping Gilead soils. The compact layer contains more red and yellow mottles and is a little closer to the surface. The organic-matter content is a little lower, and the infiltration rate and permeability are a little slower. Because of droughtiness and the greater erosion hazard, this soil can be used less frequently for row crops and requires careful management that will control erosion. (Capability unit IIIe-4; woodland suitability group 2)

Gilead loamy sand, 6 to 10 percent slopes, eroded (GeC2).—The surface layer of this soil is brownish-yellow loamy sand. It is 5 to 10 inches thick over the mottled, compact subsoil. Patches in which the subsoil is exposed are common. Because of its slope and its thinner surface layer, this soil is limited greatly in its productivity and crop suitability. It erodes readily if cropped. Even under the most careful management practical, row crops cannot be grown more often than 1 year in every 4 years. Much of the acreage is best used for pasture or to grow trees. (Capability unit IVe-4; woodland suitability group 2)

Gilead loamy sand, 10 to 15 percent slopes (GeD).—The depth to the compact layer is more variable in this soil than in more gently sloping Gilead soils. Generally the depth is less. This soil can be tilled, but its productivity is limited by droughtiness. Row crops cannot be grown frequently. To control erosion, the soil should be kept in perennial, close-growing crops 3 in every 4 years. Most of the acreage is in woods. (Capability unit IVe-4; woodland suitability group 2)

Gilead loamy sand, 10 to 15 percent slopes, eroded (GeD2).—Because of its steep slope and the shallowness to the compact layer, this soil is poorly suited to cultivated crops. If cropped, it is subject to severe water erosion. It can be improved for pasture, but its droughtiness limits productivity. Most of the acreage is in woods. (Capability unit VIe-2; woodland suitability group 2)

Gilead loamy sand, thick surface, 2 to 6 percent slopes (GkB).—The sandy surface layer of this soil is 18 to 30 inches thick. Although the effective rooting zone is deeper, this soil is more droughty and more difficult to keep productive than Gilead loamy sand, 0 to 2 percent slopes. It is suited to the same crops, but yields are lower. Erosion is a notable hazard. (Capability unit IIIs-4; woodland suitability group 2)

Gilead loamy sand, thick surface, 6 to 10 percent slopes (GkC).—This sloping soil is droughty and naturally infertile. The surface layer is 18 to 30 inches thick. In places the subsoil is less compact and less fine textured than that of Gilead loamy sand, 0 to 2 percent slopes. Yields of all crops are lower.

If this soil is cropped, it should be planted first to a close-growing crop for 2 years and then to a row crop

for 1 year. In large fields, crops should be planted in strips so that two-thirds of the field is in a close-growing crop. Much of the acreage probably is best used to grow loblolly pine or slash pine. (Capability unit IIIe-4; woodland suitability group 2)

Goldsboro Series

Soils in the Goldsboro series are level or nearly level, are moderately well drained, and have a deep effective root zone. They developed in beds of unconsolidated sands and clays of the middle Atlantic Coastal Plain. The native vegetation was a forest consisting mostly of longleaf pine and loblolly pine, in which there were a few red oak, white oak, and sweetgum trees.

The surface layer is dark gray. It is 12 to 18 inches thick. The subsoil is friable sandy clay loam. The upper part is yellowish brown, and the lower part is mottled yellowish brown, gray, and strong brown.

Goldsboro soils occur near or adjacent to Norfolk, Marlboro, Dunbar, and Lynchburg soils. They are not so well drained as Norfolk and Marlboro soils, but they are better drained than Lynchburg and Dunbar soils.

These soils contain a moderate amount of organic matter and a moderate amount of plant nutrients. They are medium acid to strongly acid. The available moisture capacity is high. Permeability is moderate. Surface runoff and internal drainage are medium, and the infiltration rate is rapid.

In Lee County, Goldsboro soils constitute 2.4 percent of the total area. They are among the more productive soils. Most of the acreage is cropped, and the remainder is in cutover loblolly pine and longleaf pine.

Goldsboro loamy sand (Go).—This nearly level, moderately well drained, productive soil is mostly in the southern part of the county, in the vicinity of Elliott and Lynchburg.

Profile—

- 0 to 14 inches, very dark gray, very friable loamy sand.
- 14 to 21 inches, yellowish-brown, friable sandy clay loam.
- 21 to 34 inches, yellowish-brown, friable sandy clay loam mottled slightly with strong brown and brownish gray; crumbles easily to irregular lumps with rounded edges.
- 34 inches +, mottled, yellow, brown, and gray, friable sandy clay loam; a few soft, red concretions.

The surface layer is 12 to 18 inches thick. In places where the organic-matter content is low, the surface layer is dark gray. In some places the surface layer is sandy loam. The texture of the subsoil ranges from sandy loam to heavy sandy clay loam. The depth to mottling ranges from 14 to 24 inches. Included with this soil are small areas of the soils that commonly occur near Goldsboro soils.

This soil has a moderate organic-matter content and a moderate natural supply of plant nutrients. It is medium acid to strongly acid. It is moderately permeable and has a high available moisture capacity.

If it is adequately drained, Goldsboro loamy sand is well suited to most of the crops commonly grown in the county. Tobacco, corn, cotton, soybeans, small grains, and truck crops all grow well. This soil is well suited to dallisgrass, white clover, crimson clover, bahiagrass, and annual lespedeza for hay and pasture. It is also suited to tall fescue, but this crop requires special management.

If a large amount of fertilizer is applied and enough organic matter is turned under, row crops can be grown each year. Crops grown on this soil respond well to fertilization. Lime is needed for most crops; the amount to apply should be determined by soil tests and crop requirements. Tile drains or open ditches, or both, are needed to remove excess water, especially in large fields. Windbreaks planted at right angles to the prevailing winds will help to control wind erosion and reduce the damage to young plants from windblown soil. (Capability unit IIw-2; woodland suitability group 6)

Grady Series

Soils in the Grady series are nearly level, slowly permeable, and poorly drained. They are deep soils that formed in the oval-shaped depressions that are known locally as Carolina bays. The parent material consisted of unconsolidated sands and clays. The native vegetation consisted mostly of loblolly pine and pond pine, and some sweetgum, blackgum, and yellow-poplar. In a few of the larger depressions where water was held for long periods, there were no trees. Water-tolerant shrubs and grasses grew here.

The surface layer is dark gray or black and 8 to 16 inches thick. The subsoil is gray sandy clay loam to sandy clay that is mottled with yellow and brown, and, to a slight extent, with red.

The surface layer of Grady soils is more variable in depth and in color than that of Coxville soils. The profile characteristics are not so well developed as in Coxville soils. There are fewer red mottles in the subsoil of Grady soils than in that of Coxville soils, and in many places there are none.

Grady soils have a moderate to high content of organic matter in the surface layer. Their entire profile is strongly acid. If drainage can be established, they produce good yields of suitable crops. Most areas are difficult to drain, however.

These soils constitute about 2 percent of Lee County. They occur mostly in the Sand Hills and in a narrow band just south of the Sand Hills. Less than half the acreage is cropped. The remainder is idle or in cutover pine and hardwoods.

Grady loam (Gr).—This soil occurs in the larger Carolina bays.

Profile—

- 0 to 14 inches, very dark gray or black, friable loam.
- 14 to 28 inches, gray heavy sandy clay loam; streaks and pockets of dark grayish brown; plastic and sticky when wet; texture is coarser with depth.
- 28 to 72 inches, light-gray loamy sand; a little fine quartz gravel; some dark streaks of material from the surface layer; pockets and lenses of finer textured material.
- 72 inches +, light-gray clay loam; a few red mottles.

The gray to black surface layer is 8 to 16 inches thick. Its texture is loam or sandy loam. The subsoil ranges from sandy clay loam to sandy clay, and sandy lenses occur in some profiles. The color of the subsoil varies considerably from place to place. In some places it is light gray with little or no mottling; in other places it is light gray to gray with many yellow and brown mottles. Red mottles are not common but occur in a few places.

Ordinarily, this soil does not have any natural drainage outlets. The depressions in which it occurs have low to high rims, and some of them are covered by water for long periods. As a rule, trees do not grow in these very wet areas. If adequate drainage is established, Grady loam produces good yields of corn, soybeans, small grains, and annual lespedeza. (Capability unit IIIw-2; woodland suitability group 5)

Grady sandy loam (Gs).—This soil differs from Grady loam in having a sandy loam surface layer and, generally, a somewhat coarser textured subsoil. Use and management for the two soils are the same. (Capability unit IIIw-2; woodland suitability group 5)

Gullied Land

Gullied land (Gu).—Most of this sloping to steep miscellaneous land type is in the northern part of the county. A large part of the surface soil and, in places, part of the subsoil have been removed by erosion. Some of the areas consist of one large gully; others consist of an intricate pattern of small gullies.

In general, this land type is not suited to either crops or pasture, although some of the less deeply eroded areas can be reclaimed if the remaining soil material is moderately permeable. Heavy fertilization and much reworking of the soil material are generally required, however. High productivity cannot be expected, because of the limited available moisture capacity. (Capability unit VIIIs-2; woodland suitability group 12)

Izagora Series

The Izagora series consists of deep, nearly level, moderately well drained to somewhat poorly drained soils. These soils formed on stream terraces in old general alluvium washed chiefly from soils in the Sand Hills. Originally they were covered by a forest of red oak, white oak, blackgum, yellow-poplar, and maple, in which there were scattered longleaf pines and loblolly pines.

The surface soil is dark gray. It is 10 to 20 inches thick. The subsoil is light olive-brown sandy clay loam and has varying amounts of mottling.

Izagora soils have a profile similar to that of Goldsboro soils, but the subsoil is mottled a little closer to the surface than in Goldsboro soils. They are better drained than Wahee and Myatt soils.

These soils have a moderate organic-matter content and a moderate natural supply of plant nutrients. They are acid. Permeability is moderately slow. The available moisture capacity is moderate. If adequately drained, these soils are productive of most crops.

Izagora soils make up only a little more than 1 percent of Lee County. Most of the acreage is cultivated. The remainder is in cutover oak, gum, and pine.

Izagora sandy loam (Iz).—Drainage of this soil ranges from moderately good to somewhat poor. The characteristics of the following profile indicate that it is in the better drained part of the range for Izagora soils.

Profile—

- 0 to 12 inches, dark-gray, friable sandy loam.
- 12 to 19 inches, light olive-brown, friable sandy clay loam; breaks easily into medium-sized, blocky lumps.

19 to 31 inches, light olive-brown, slightly firm sandy clay loam; a few yellowish-red and many light brownish-gray mottles; slightly firm but breaks into medium-sized blocky lumps.

31 to 57 inches, gray, friable sandy clay loam mottled with red and yellowish brown.

The surface layer is gray to dark gray and 10 to 20 inches thick. Its texture generally is sandy loam but is fine sandy loam in some places. In some places the subsoil is mottled throughout, but in other places it has a uniform light olive-brown color in the upper part. In some areas firm to very firm, more clayey material occurs at a depth of 28 to 30 inches. A few small areas of Leaf and Myatt soils are included.

This soil has a moderate organic-matter content and a moderate natural supply of plant nutrients. It is acid. It has a moderate available moisture capacity. Most areas are difficult to drain. In some places drainage outlets are not available and only shallow, V-type ditches can be used to remove excess water. This soil cannot be cultivated so soon after a rain as Kalmia and Cahaba soils, and the surface layer becomes hard during long dry periods.

If drained, this soil is well suited to oats and corn and fairly well suited to cotton and soybeans. It is fairly well suited to dallisgrass, bermudagrass, tall fescue, bahiagrass, annual lespedeza, crimson clover, and white clover for pasture. Under good management, yields are good. If adequate amounts of fertilizer and organic matter are added, row crops can be grown every year. Either open ditches or tile drains should be used to remove excess water. This soil has a high site index for loblolly pine and slash pine. (Capability unit IIw-2; woodland suitability group 6)

Kalmia Series

The Kalmia series consists of deep, nearly level, well-drained soils on stream terraces. They formed in old general alluvium washed chiefly from soils on uplands in the Coastal Plain and, to some extent, from soils on uplands in the Piedmont Plateau. The native vegetation was a forest of longleaf pine, loblolly pine, some red oak and white oak, and a few hickory and dogwood trees.

The surface layer is grayish brown. The subsoil is yellowish-brown, friable sandy clay loam.

Kalmia soils occur near Cahaba soils and the terrace phase of Lakeland soils. They differ from Cahaba soils chiefly in having a yellowish, rather than a reddish, subsoil. They are finer textured than Lakeland soils and are well drained rather than excessively drained.

These soils have a low to moderately low organic-matter content and a moderately low supply of plant nutrients. They are strongly acid. They are moderately permeable and have a moderate available moisture capacity.

In Lee County, Kalmia soils occur on the highest parts of the stream terraces, chiefly the Lynchies River terrace. They occupy a little more than 2,100 acres, or less than 1 percent of the county. Most of the acreage is cultivated.

Kalmia loamy sand (Ka).—This is one of the more productive soils on the stream terraces in the county. Most of the acreage is used for cultivated crops.

Profile—

0 to 15 inches, grayish-brown loamy sand.

15 to 36 inches, yellowish-brown, friable sandy clay loam; breaks easily to medium-sized blocky lumps; a few soft, red concretions.

36 inches +, yellowish-brown, friable sandy clay loam; a few small, dark-brown and pale-brown mottles; a few soft, red concretions; pockets and lenses of sand.

The surface soil is 12 to 18 inches thick. In some places its color grades to gray. In a few places the subsoil is sandy clay. Concretions and coarse quartz grains are common in some places. A few small areas have a slope of 2 to 6 percent.

This soil is easily tilled, and it can be tilled soon after rains. The organic-matter content and the natural supply of plant nutrients are moderately low. Permeability, the infiltration rate, and the available moisture capacity are all moderate.

Kalmia loamy sand is well suited to cotton, corn, small grains, tobacco, soybeans, velvetbeans, and truck crops. Bahiagrass, Coastal bermudagrass, sericea lespedeza, and crimson clover are suitable hay and pasture plants. If a legume cover crop is turned under each year and adequate amounts of fertilizer are applied, row crops can be grown continuously. Lime should be applied according to soil tests. (Capability unit I-1; woodland suitability group 2)

Kalmia loamy sand, thick surface (Kt).—This soil is coarser textured throughout than Kalmia loamy sand. It is more droughty because of its more rapid permeability and lower available moisture capacity. Its surface layer is 18 to 30 inches thick.

This soil is well suited to sweetpotatoes, velvetbeans, and watermelons and fairly well suited to cotton, corn, tobacco, peanuts, and oats. Coastal bermudagrass, bahiagrass, and sericea lespedeza are suitable plants for hay and pasture. Yields are lower than those on Kalmia loamy sand, even under the same management. A close-growing crop should be grown every other year. Additions of large amounts of organic matter will help to maintain yields. (Capability unit IIs-1; woodland suitability group 2)

Lakeland Series

Soils in the Lakeland series are deep, nearly level to strongly sloping, and excessively drained. They formed in beds of unconsolidated sands of the Coastal Plain. The native vegetation was longleaf pine and an understory of scrub oak.

These soils show little profile development, chiefly because of the very low content of clay in the parent material. In some places sandstone fragments and quartz pebbles occur on the surface, but they ordinarily are not numerous enough to interfere with tillage. The surface layer is dark gray to light gray. The underlying layers are light yellowish brown and range from sand to sandy loam in texture. These soils are acid. They have a very low supply of plant nutrients and a very low organic-matter content. They are rapidly permeable.

Lakeland soils are more sandy than Norfolk soils. They lack the finer textured subsoil characteristic of Norfolk soils.

In Lee County, Lakeland soils make up about 10 percent of the total area. They occur in narrow bands along the

eastern side of the major streams and are widely distributed throughout other parts of the county. About 80 percent of the acreage is now in cutover blackjack oak, turkey oak, and scattered pines. In the past few years, a considerable part of the acreage has been cleared of scrub oak and planted to pine. The more level areas are used for crops, but yields are low. Generally, these sandy soils are not suited to terracing.

Lakeland sand, 0 to 6 percent slopes (LkB).—This is the most extensive of the Lakeland soils in the county. It is on the ridgetops in the Sand Hills.

Profile—

0 to 2 inches, dark-gray, loose sand.

2 to 8 inches, grayish-brown, loose sand.

8 to 40 inches, light yellowish-brown, loose sand; a few fine, very pale brown mottles in the lower part.

The surface layer ranges from dark gray to light gray, depending on the content of organic matter. The subsoil ranges from 2½ feet to several feet in thickness and from pale yellow to yellowish brown in color. The texture is sand or loamy sand. Included are areas of Local alluvial land too small to be mapped separately.

The natural supply of plant nutrients in this soil is low. The surface layer of areas under forest cover contains a small amount of organic matter. If the soil is cropped, both organic matter and fertilizer are leached out quickly. Permeability is rapid, and the available moisture capacity is low. Consequently, the soil is droughty. The soil can be tilled soon after a rain, and it does not become hard when dry. Wind erosion is a hazard in large cultivated fields until a good plant cover has been established.

Watermelons, peaches, corn, cowpeas, rye, velvetbeans, and cotton are the principle crops. Bahiagrass, Coastal bermudagrass, and sericea lespedeza are grown if it is necessary to use this soil for pasture. Windbreaks and strips of close-growing perennial crops help to control soil blowing. If scrub oaks are controlled, pines grow fairly well. (Capability unit IVs-1; woodland suitability group 1)

Lakeland sand, 6 to 15 percent slopes (LdD).—Because of its stronger slope, this soil is more subject to erosion and is less well suited to cultivation than Lakeland sand, 0 to 6 percent slopes. The areas are smaller in size. It is a little more difficult to carry out field operations. Productivity is a little lower because of greater droughtiness. Most of the acreage can be used for permanent pasture or for timber. (Capability unit IVs-1; woodland suitability group 1)

Lakeland sand, shallow, 0 to 2 percent slopes (LkA).—This nearly level soil has a thinner surface layer than Lakeland sand, 0 to 6 percent slopes. It generally occurs in small areas. Most of the acreage is used for crops.

This soil has a sandy loam or sandy clay loam layer at a depth of 30 to 36 inches. It has a higher natural supply of plant nutrients, requires less fertilizer, and has a higher available moisture capacity than Lakeland sand, 0 to 6 percent slopes. Consequently, it is more productive. It is not likely to be eroded by water, but there is a risk of wind erosion in large fields.

This soil is suited to watermelons, sweetpotatoes, peaches, and velvetbeans. It is fairly well suited to cotton, corn, peanuts, and oats. It is suited to sericea lespedeza for both hay and pasture, and to bahiagrass and

Coastal bermudagrass for pasture. (Capability unit IIIs-1; woodland suitability group 1)

Lakeland sand, shallow, 2 to 6 percent slopes (LkB).—This soil is less droughty than Lakeland sand, 0 to 6 percent slopes, and it has a higher natural supply of plant nutrients. Its surface layer is 30 to 36 inches thick and is underlain by a sandy loam or sandy clay loam subsoil. This soil is fairly well suited to cotton, corn, peanuts, and oats. Under good management, yields of sweetpotatoes, peaches, and velvetbeans are good. (Capability unit IIIs-1; woodland suitability group 1)

Lakeland sand, shallow, 6 to 10 percent slopes (LkC).—This soil has a sandy loam or sandy clay loam layer at a depth of 30 to 36 inches. It is droughty, but, because of this finer textured layer, it retains both moisture and plant nutrients better than Lakeland sand, 0 to 6 percent slopes. It is subject to wind erosion and, because of its slope, also to water erosion.

To maintain or to increase the supply of organic matter and to control erosion, this soil should be kept in a close-growing crop 3 in every 4 years. It is fairly well suited to watermelons, corn, and cowpeas, but yields are low. It is best suited to perennial vegetation, such as sericea lespedeza and pine trees. (Capability unit IVs-1; woodland suitability group 1)

Lakeland sand, terrace, 0 to 6 percent slopes (LnB).—This soil is on river terraces. It is flooded occasionally. The profile differs from that of Lakeland sand, 0 to 6 percent slopes, which is on uplands, in being mottled with gray in the lower part. Because it occurs at low elevations and is subject to frost damage, this soil is not suited to peaches. Otherwise, it can be used and managed in the same way as Lakeland sand, 0 to 6 percent slopes. (Capability unit IVs-1; woodland suitability group 1)

Lakewood Series

The Lakewood series consists of excessively drained, deep, loose sands that formed in beds of unconsolidated sands of the Coastal Plain. The native vegetation consisted of longleaf pine and an understory of scrub oak, gallberry, and lichens.

From a distance these soils appear to be white, but when examined more closely they have a salt-and-pepper appearance. The subsoil is gray to a depth of 20 inches, and there is a thin, cemented, organic layer directly below this layer. In some places, however, this cemented layer is absent. The soils are low in organic-matter content and in supply of plant nutrients. They are strongly acid. Their moisture-holding capacity is low.

Lakewood soils commonly occur adjacent to Lakeland soils. They differ from Lakeland soils in having a cemented layer.

Soils in the Lakewood series occupy only 1,332 acres in Lee County. They occur along the eastern side of the major streams and on the southern and eastern rims of some of the larger Carolina bays. Most of the acreage is covered with scrub oak and scattered low-grade pines.

Lakewood sand, 0 to 10 percent slopes (LoC).—This is a grayish, excessively drained, sandy soil of the uplands.

Profile—

0 to 2 inches, loose sand; very dark gray when wet, white when dry; commonly has a salt-and-pepper appearance.

2 to 20 inches, light-gray, loose sand; some black organic matter from layer above is lodged in this layer.

20 to 21 inches, reddish-brown sand; slightly compacted and cemented; becomes hard and brittle when dry; crushes to a loose mass.

21 to 40 inches, brownish-yellow sand; structureless, single grain; some pockets of dark-colored sand high in organic-matter content.

Other dark-colored, cemented layers similar to the 20- to 21-inch layer occur deeper in the profile. The second layer (2 to 20 inches) ranges from 12 to 24 inches in thickness within a short distance. The cemented organic layer is absent in places. Permeability is rapid. The available moisture capacity is low, and the natural supply of plant nutrients is very low.

The productivity of this soil is too low to make it useful for cultivated crops. Pine trees grow fairly well if scrub oak is controlled. (Capability unit VIIc-1; woodland suitability group 7)

Leaf Series

The Leaf series consists of nearly level, poorly drained, fine-textured soils on stream terraces. The parent material was old alluvium that washed chiefly from soils in the Coastal Plain but included a small amount of material from soils in the Piedmont Plateau. The native vegetation was a forest of blackgum, sweetgum, red oak, white oak, yellow-poplar, and some loblolly pine and pond pine.

The gray surface layer is 6 to 12 inches thick. The subsoil is gray sandy clay mottled with brown and red. Leaf soils are similar in texture to the associated Wahee soils, but they are more poorly drained.

Leaf soils have a moderate organic-matter content and a moderate supply of plant nutrients. They are medium acid to strongly acid. They are limited in their use and in productivity by their wetness and unfavorable consistence. Surface runoff is slow, and internal drainage is slow. The infiltration rate is slow, and the available moisture capacity is moderate.

These soils are not extensive in Lee County, where they occur on the lower parts of the stream terraces. About 95 percent of the acreage is in cutover hardwoods and pines. The rest is used for cultivated crops and for pasture.

Leaf fine sandy loam (ls).—This poorly drained soil has a slowly permeable subsoil.

Profile—

0 to 10 inches, gray fine sandy loam mottled with pale brown in the lower part; abrupt lower boundary.

10 to 28 inches, gray fine sandy clay mottled with red and strong brown; breaks to small and medium-sized blocky lumps with sharp angular edges; slightly firm.

28 to 36 inches +, mottled, gray, red, and strong-brown fine sandy clay; contains a few pockets of fine sand.

The color of the surface layer ranges from black to light gray, depending on the amount of organic matter present. The texture ordinarily is fine sandy loam but is sandy loam in some places. In places the subsoil is clay loam, and in some areas it is mottled with yellowish brown rather than red.

Most areas of this soil are difficult to drain because of their slow permeability and low-lying position. In wet weather, the soil is puddled or packed by cultivation or grazing; in dry weather, it is hard and cloddy. If effec-

tively drained and adequately fertilized, this soil produces fair yields of corn, soybeans, and oats, but it is more productive as pasture. Dallisgrass, bermudagrass, tall fescue, whiteclover, and annual lespedeza are the best pasture plants. Lime is required for good yields of most crops. (Capability unit IVw-2; woodland suitability group 5)

Local Alluvial Land

Local alluvial land (lv).—This nearly level miscellaneous land type consists chiefly of young alluvium washed from Norfolk, Ruston, Marlboro, Gilead, and Lakeland soils of the adjacent uplands. It also includes some colluvial material. It occurs in slight depressions or at the head of small drainageways and makes up less than 1 percent of the county.

The color of the surface layer of this land type ranges from dark gray to grayish brown, and the texture, from loam to loamy sand. The thickness of the alluvium ranges from 12 to 40 inches. Drainage is moderately good to somewhat poor. The available moisture capacity is moderate to high. The organic-matter content is moderate, and the natural supply of plant nutrients is high.

This land type is well suited to truck crops, corn, small grains, and soybeans. Cotton generally makes a rank growth and is damaged by insects and diseases. If insects and diseases are controlled, however, cotton yields are good. Bermudagrass, bahiagrass, whiteclover, and annual lespedeza are the best hay and pasture plants. Open ditches and tile drains can be used to remove excess water. Terraces or diversion channels are of value in protecting areas of this land type against runoff from the adjacent higher areas. (Capability unit IIw-1; woodland suitability group 10)

Lynchburg Series

Soils in the Lynchburg series are nearly level, somewhat poorly drained, and deep. The parent material consisted of beds of acid, unconsolidated sandy clay loams and sandy loams of the Coastal Plain. The native vegetation was a forest of longleaf pine, loblolly pine, a few pond pines, and an understory of gallberry and other low-growing shrubs.

The surface layer is dark gray. It is 12 to 18 inches thick. The subsoil is mottled gray and brown sandy clay loam.

Lynchburg soils commonly are associated with Goldsboro, Dunbar, and Coxville soils and, less extensively, with Norfolk and Marlboro soils. They have the same drainage characteristics as Dunbar soils but have a slightly coarser textured, less firm subsoil. They are similar in subsoil texture to Goldsboro soils, but they are somewhat poorly drained rather than moderately well drained. Lynchburg soils are better drained than Coxville soils and have a coarser textured subsoil.

In Lee County, Lynchburg soils occur in large, broad areas, mostly in the southern part near the towns of Elliott and Lynchburg. They make up a little more than 8 percent of the county. Many areas have no natural drainage outlets and are mostly in longleaf pine and loblolly pine. Areas that are more easily drained are cultivated, and they are productive under good management.

Lynchburg sandy loam (ly).—This soil is deep, friable, nearly level, and somewhat poorly drained.

Profile—

- 0 to 8 inches, very dark gray, very friable sandy loam.
- 8 to 13 inches, grayish-brown, very friable sandy loam.
- 13 to 36 inches, gray, friable sandy clay loam; many mottles.
- 36 inches +, mottled, light-gray, yellowish-brown, and brown, mixed sandy clay loam and sandy loam.

If the soil has been cultivated for a number of years, the surface layer is dark gray rather than very dark gray. The texture is sandy loam or fine sandy loam. The amount of mottling in the subsoil varies. Coarse quartz grains are common in the surface layer and, in places, throughout the profile.

The rate of water intake and the rate of movement of water through the soil are favorable for plant growth. The available moisture capacity is high. The natural fertility is high, and the organic-matter content is moderate.

If it is adequately drained, this soil is well suited to cotton, corn, tobacco, soybeans, annual lespedeza, and small grains and to a wide variety of annual pasture plants and permanent pasture grasses. It is not well suited to sericea lespedeza, because deep drainage ordinarily is not possible.

If drained, this soil is well suited to mechanized farming, and crops respond well to good management. Heavy applications of fertilizer are required for high yields. Under these conditions, this soil can be intensively cropped. (Capability unit IIw-2; woodland suitability group 6)

Magnolia Series

Soils in the Magnolia series are deep, nearly level to gently sloping, reddish, and well drained. They developed in thick beds of unconsolidated, acid sandy loams and sandy clays. The native vegetation consisted of loblolly pine, red oak, white oak, and an understory of shrubs and vines.

The surface layer is reddish brown. It is about 12 inches thick. The subsoil is dark-red sandy clay. Magnolia soils occur near Orangeburg soils and other well-drained soils of the uplands. They have a thinner surface layer and a more clayey subsoil than Orangeburg soils.

The organic-matter content of these soils is moderate. Permeability is moderate, and the available moisture capacity is moderate.

In Lee County, Magnolia soils occur on high, nearly level to gently sloping ridgetops. They are among the most productive soils in the county, but their total area is small. All the acreage is cultivated.

Magnolia loamy sand, 0 to 2 percent slopes (MaA).—This is a red, well-drained, productive soil of the uplands.

Profile—

- 0 to 12 inches, reddish-brown loamy sand; friable; crumbles to small, rounded lumps; abrupt lower boundary.
- 12 to 47 inches, dark-red sandy clay; breaks easily to medium-sized, blocky lumps with rounded edges; firm when dry.
- 47 to 74 inches, dark-red sandy clay and sandy loam in layers of varying thickness.

The surface layer is 8 to 12 inches thick.

This moderately fertile soil is easily worked. It is slightly acid. The organic-matter content is moderate. Permeability is moderate, and the infiltration rate is moderate. The available moisture capacity is moderate.

This soil is well suited to cotton, corn, soybeans, peanuts, and small grains. Crops respond well to fertilization. Tobacco makes too rank a growth and, as a consequence, is of lower quality than that grown on less fertile soils.

Magnolia loamy sand, 0 to 2 percent slopes, is well suited to mechanized farming, since it is nearly level and has good tilth. Fields are large. Under good management, which includes adequate fertilization and maintenance of the organic-matter content, it can be cultivated intensively. (Capability unit I-2; woodland suitability group 4)

Magnolia loamy sand, 2 to 6 percent slopes, eroded (MaB2).—This soil has a thinner surface layer than Magnolia loamy sand, 0 to 2 percent slopes. Because of its stronger slope, it is more subject to water erosion. It is suited to moderately intensive use if runoff is adequately controlled. (Capability unit IIe-2; woodland suitability group 4)

Marlboro Series

Soils in the Marlboro series are deep, nearly level to sloping, and well drained. They formed in thick beds of unconsolidated sands and clays on the uplands in the middle and lower parts of the Coastal Plain. The native vegetation was a forest of red oak, white oak, loblolly pine, longleaf pine, and a few scattered hickory, dogwood, and elm trees.

The surface soil is grayish brown. It is 8 to 12 inches thick. The subsoil is yellowish-brown, friable sandy clay. These soils are moderately permeable, moderately fertile, and low in organic-matter content.

Marlboro soils are similar to the associated Norfolk soils in color, but they are finer textured throughout and have a thinner surface layer.

In Lee County, Marlboro soils constitute about 8 percent of the total area. They occur in all parts of the county except the Sand Hills. They are among the more productive soils. Almost all the acreage is cultivated.

Marlboro loamy sand, 0 to 2 percent slopes (MbA).—This well-drained soil is particularly well suited to cotton.

Profile—

- 0 to 8 inches, dark grayish-brown loamy sand; abrupt lower boundary.
- 8 to 36 inches, dark yellowish-brown, friable sandy clay; breaks to medium-sized blocky lumps; slightly sticky when wet.
- 36 inches +, yellowish-brown and strong-brown sandy clay loam or sandy clay; a few soft concretions and occasional lenses of white kaolin.

The dark grayish-brown to light-gray surface layer generally is 8 inches thick, but the range in thickness is up to 12 inches. In places concretions are common on the surface and throughout the profile. Permeability, the infiltration rate, and the available moisture capacity are moderate. The organic-matter content is moderate, and the natural supply of plant nutrients is high.

This soil is well suited to cotton, tobacco, corn, small grains, soybeans, peanuts, annual lespedezas, and some truck crops. It is also well suited to bahiagrass, Coastal bermudagrass, and sericea lespedeza for hay and pasture. Yields of cotton are good on some fields, even though the soil has been used for this crop for more than 50 years.

The areas of this soil are large. Because of this and its very mild slope, this soil is well suited to mechanized

farming. Crops respond well to good management. If fertilizer and organic matter are added, row crops can be grown each year. (Capability unit I-2; woodland suitability group 4)

Marlboro loamy sand, 2 to 6 percent slopes (MbB).—This gently sloping soil is suited to the same crops as Marlboro loamy sand, 0 to 2 percent slopes. Yields are about the same. The hazard of water erosion is moderate, but erosion is not difficult to control if a close-growing crop is included in the rotation. Terraces will help to slow the rate of runoff. A rotation of a close-growing crop for 1 year and a row crop the next year will help to maintain the organic-matter content and to control erosion. (Capability unit IIe-2; woodland suitability group 4)

Marlboro loamy sand, 2 to 6 percent slopes, eroded (MbB2).—This eroded, gently sloping soil has a thinner surface layer than Marlboro loamy sand, 0 to 2 percent slopes. Small spots of subsoil exposed at the surface are common. All the acreage has been cropped at some time. This soil is suited to the same crops as the nearly level Marlboro soil, and yields are nearly as high. In dry years, however, good stands of row crops are difficult to obtain on the more eroded spots. To control water erosion, a close-growing crop should be included in the rotation, and such measures as contour cultivation and terraces are needed on the longer slopes. (Capability unit IIe 2; woodland suitability group 4)

Marlboro loamy sand, 6 to 10 percent slopes, eroded (MbC2).—This sloping soil has a thinner surface layer than Marlboro loamy sand, 0 to 2 percent slopes. Patches of exposed sandy clay subsoil are common.

Except for tobacco, this soil is suited to the same crops as the nearly level and gently sloping Marlboro loamy sands. Because of the less favorable tilth of the more eroded spots and the lower available moisture capacity, yields generally are somewhat lower.

This soil is not so well suited to mechanized farming, because of the smaller fields and the stronger slope. Erosion is a serious problem. If the soil is cropped, good management requires that no more than a third of any area be in a row crop in any given year. Terraces will help to control erosion by slowing down runoff. (Capability unit IIIe-2; woodland suitability group 4)

Mixed Alluvial Land

Mixed alluvial land (Mx).—This nearly level miscellaneous land type is poorly drained to very poorly drained. It consists of various kinds of local alluvium and occurs along the smaller streams throughout Lee County. It is subject to frequent overflow. The native vegetation consisted chiefly of water oak, blackgum, sweetgum, cypress, and juniper but included some maple trees and some gallberry and bayberry bushes. All of the acreage is in timber, much of which has been cut over.

The color of the soil material ranges from black to light gray, and the texture, from sand to silty clay. Generally, the organic-matter content is high in the uppermost 6 to 12 inches. Because of frequent flooding and the difficulty of drainage, this land type is best used for wood crops. (Capability unit Vw-2; woodland suitability group 8)

Myatt Series

Soils in the Myatt series are deep, nearly level, and poorly drained. They formed in beds of unconsolidated sands and clays on stream terraces in the Atlantic Coastal Plain. The native vegetation was a forest that consisted chiefly of blackgum, sweetgum, tupelo-gum, maple, and cypress, a scattering of loblolly pine and pond pine, and a few oaks.

The surface layer is dark gray. The friable sandy clay loam subsoil is gray mottled with yellowish brown. These soils have a low organic-matter content and a low natural supply of plant nutrients. They are strongly acid. Wetness is the chief limitation to their use, and some areas are difficult to drain.

Myatt soils have a thinner organic surface layer than the nearby, more poorly drained Okenee soils and are less dark in color. Their subsoil is coarser textured and more friable than that of the nearby Leaf soils.

These soils are not extensive in Lee County. They occur on the lower parts of the terraces bordering the larger streams. Most of the acreage is in cutover hardwood forest. A very small part of the acreage is cleared and cultivated.

Myatt sandy loam (My).—This nearly level, poorly drained soil is on the terraces of the larger streams in the county.

Profile—

- 0 to 9 inches, dark olive-gray, very friable sandy loam.
- 9 to 18 inches, gray, very friable sandy loam; a few distinct, dark yellowish-brown mottles.
- 18 to 32 inches, gray, friable sandy clay loam; a few distinct, dark yellowish-brown mottles.
- 32 inches +, light-gray, loose sand.

In places the surface layer is fine sandy loam. Included are some small areas of Okenee loam.

This soil has a low organic-matter content and a low supply of plant nutrients. It is strongly acid. It requires drainage, but most of the areas are difficult to drain. Furthermore, because of the friable subsoil, the sides of open ditches do not stand up well. In cultivated areas, fertilizers are leached out readily.

Because of its wetness and poor response to fertilization, this soil is greatly limited in its suitability for the commonly grown crops and pasture plants. Much of the acreage is in cutover hardwood forest. This soil is well suited to loblolly pine and pond pine. There are some desirable sites for excavated ponds. (Capability unit IVw-3; woodland suitability group 9)

Norfolk Series

The Norfolk series consists of deep, well-drained, nearly level to sloping, friable soils that developed in beds of unconsolidated sands and clays. The native vegetation was mostly longleaf pine and slash pine but included a few red oaks and white oaks.

The grayish-brown surface layer is about 16 inches thick and is underlain by a yellow to yellowish-brown, friable sandy clay loam subsoil. Thick surface phases are mapped where the surface layer is 18 to 30 inches thick.

Norfolk soils are coarser textured than the associated Marlboro soils. The friable B horizon of Norfolk soils is yellow to yellowish brown, whereas that of the associated Ruston soils is yellowish red.

Norfolk soils have a low content of organic matter and plant nutrients and are medium acid. They are moderately permeable, have good tilth, and have a moderate available moisture capacity. They retain added plant nutrients well. Because of these favorable qualities, crops grown on these soils are very responsive to good management, especially to heavy fertilization.

Soils in this series occur on uplands throughout Lee County. They constitute about 15 percent of the total acreage and are used mostly for cultivated crops.

Norfolk loamy sand, 0 to 2 percent slopes (NoA).—This nearly level, well-drained soil is highly regarded for the production of tobacco and cotton.

Profile—

0 to 12 inches, grayish-brown to light yellowish-brown, very friable loamy sand.

12 to 16 inches, yellowish-brown light sandy clay loam; friable.

16 to 42 inches, yellowish-brown sandy clay loam; friable; breaks easily to medium-sized blocky lumps with rounded edges.

42 inches +, yellowish-brown sandy clay loam; pockets of sand and loamy sand; many soft concretions.

In places the surface layer, a loamy sand or sandy loam, is as much as 18 inches thick. Included are a few areas of Local alluvial land too small to be shown separately on the map.

This soil is easily tilled; it can be worked soon after a rain and can be grazed without damage in most kinds of weather. It is well suited to mechanized farming. It has a moderately low content of organic matter and plant nutrients and is medium acid. It is moderately permeable, has a moderate available moisture capacity, and retains added plant nutrients well.

This fairly extensive soil is well suited to tobacco, cotton, corn, small grains, soybeans, truck crops, and the other crops commonly grown in the county. Almost all the acreage is cultivated. Yields are high under good management. Suitable hay and pasture plants are bahiagrass and Coastal bermudagrass, grown with sericea lespedeza and crimson clover.

Under good management, row crops can be grown each year. Except for tobacco, lime is required for high yields. Windbreaks planted at right angles to the prevailing winds will help to control soil blowing in large open fields. (Capability unit I-1; woodland suitability group 2)

Norfolk loamy sand, 2 to 6 percent slopes (NoB).—This gently sloping soil is suited to the same crops as Norfolk loamy sand, 0 to 2 percent slopes. Under similar management, crop yields are about the same. Most of the fields of this soil are large and well suited to mechanized farming. Because of the stronger slopes, however, some measures are necessary to control erosion. Maintaining high fertility, growing a close-growing crop every other year, and returning crop residues to the soil are usually effective. The main waterways should be kept in grass. Terraces will help to control erosion in some places. (Capability unit IIe-1; woodland suitability group 2)

Norfolk loamy sand, 2 to 6 percent slopes, eroded (NoB2).—This gently sloping soil has a thinner surface layer than Norfolk loamy sand, 0 to 2 percent slopes. Erosion is a moderate hazard, and in some places patches of the subsoil have been exposed. Where the subsoil is now at the surface, the soil is apt to be hard and cloddy, and it is difficult to establish a good stand of some crops. Otherwise, the soil is suited to the same crops and requires

about the same management as the less eroded, gently sloping phase. All the acreage has been cropped, but the total area is small. (Capability unit IIe-1; woodland suitability group 2)

Norfolk loamy sand, 6 to 10 percent slopes (NoC).—This sloping soil is not extensive. It occurs mostly in narrow strips, small in size, below more extensive areas of nearly level or gently sloping Norfolk soils. In general, the surface layer is thinner than that of Norfolk loamy sand, 0 to 2 percent slopes. (Capability unit IIIe-1; woodland suitability group 2)

Norfolk loamy sand, 6 to 10 percent slopes, eroded (NoC2).—This soil occurs in small areas. The yellowish-brown surface layer is only 4 to 6 inches thick, and there are many patches of sandy loam or sandy clay loam. Small gullies are common. Because of the erosion hazard and droughtiness, this soil is limited in use. Good management requires keeping cultivation to a minimum. Bahiagrass, Coastal bermudagrass, sericea lespedeza, and crimson clover are suitable hay and pasture plants. Many sites are well suited to farm ponds, and the soil material is excellent for building dams. (Capability unit IIIe-1; woodland suitability group 2)

Norfolk loamy sand, thick surface, 0 to 2 percent slopes (NiA).—The surface layer of this soil is 18 to 30 inches thick. The soil is coarser textured throughout than Norfolk loamy sand, 0 to 2 percent slopes. Consequently, it is more droughty, is less retentive of plant nutrients, and is more likely to be eroded by wind. It is well suited to sweetpotatoes, watermelons, velvetbeans, and soybeans, but only fairly well suited to cotton, corn, and small grains. It is also suited to Coastal bermudagrass, bahiagrass, and sericea lespedeza for hay and pasture. Most of the acreage is cultivated. Large amounts of fertilizer and organic matter are required for good yields. A close-growing crop should be grown at least half the time, since wind erosion is active if the soil is not protected. (Capability unit IIs-1; woodland suitability group 2)

Norfolk loamy sand, thick surface, 2 to 6 percent slopes (NiB).—Plant nutrients are readily leached from this droughty, gently sloping soil, which has a surface layer 18 to 30 inches thick. This soil is subject to wind erosion and, because of its slope, to water erosion. It is suited to the same crops as Norfolk loamy sand, 0 to 2 percent slopes. Yields are lower, however, because of this soil's lower capacity to hold available water. (Capability unit IIs-1; woodland suitability group 2)

Norfolk loamy sand, thick surface, 6 to 10 percent slopes (NiC).—The surface layer of this soil is light yellowish-brown loamy sand. It is 18 to 30 inches thick. It is underlain by yellowish-brown, friable sandy clay loam that is more sandy at a depth of about 40 inches. This soil is droughty; it has low capacity to hold plant nutrients; and it is susceptible to erosion. It is fairly well suited to sweetpotatoes, watermelons, cotton, corn, oats, velvetbeans, and soybeans. Coastal bermudagrass, bahiagrass, and sericea lespedeza are suitable hay and pasture plants. Loblolly pine and slash pine grow well on this soil. (Capability unit IIIe-5; woodland suitability group 2)

Norfolk loamy fine sand, 0 to 2 percent slopes (NiA).—This soil is a little finer textured than Norfolk loamy sand, 0 to 2 percent slopes. Its available moisture capacity is a little greater. In suitability for use and in

management requirements, the two soils are similar, and yields are about the same. (Capability unit I-1; woodland suitability group 2)

Okenee Series

The Okenee series consists of deep, nearly level, very poorly drained soils on stream terraces in the Coastal Plain. They formed in beds of unconsolidated, medium-textured and moderately fine textured sediments washed mainly from soils in the Coastal Plain. The native vegetation was a forest that consisted chiefly of blackgum, sweetgum, cypress, and water oak, but also included a few loblolly pines and pond pines.

The surface layer of these soils is black, very friable, and very high in organic-matter content. The subsoil is gray sandy clay. Okenee soils are strongly acid. They have a moderate natural supply of plant nutrients. They are moderately permeable, have a moderate infiltration rate, and have a moderate available moisture capacity.

Okenee soils are more poorly drained than the nearby Myatt and Leaf soils. They have a higher organic-matter content than these soils. They are not so fine textured as Leaf soils.

These soils make up about 1.5 percent of the total area of Lee County. They occur on the terrace edges next to the uplands. Most of the acreage is in cutover hardwoods.

Okenee loam (Ok).—This is the only soil of the Okenee series mapped in Lee County.

Profile—

- 0 to 20 inches, black, friable loam; very dark gray in lower part.
- 20 to 30 inches, gray sandy clay; slightly sticky; contains sand lenses in lower part; water table at 30 inches.
- 30 inches +, light-gray sand and sandy loam.

The surface layer is 18 to 24 inches thick. In places the texture is sandy loam. The subsoil is 10 to 24 inches thick. In places it is mottled. In some places the underlying material is sandy clay loam. Included are small areas of Portsmouth soils, which have a thinner surface layer.

Wetness is the chief limitation to cultivation. Many areas are difficult to drain because of the lack of suitable outlets for drainage ditches. If outlets are available, this soil is well suited to artificial drainage and to sprinkler irrigation. If drained, it is well suited to corn, oats, soybeans, and truck crops, and to dallisgrass, tall fescue, whiteclover, and annual lespedeza for hay and pasture. Crops respond well to applications of fertilizer.

Trees grow well on this soil. Because water stands on or near the surface most of the time, it is difficult to manage and harvest timber on the undrained areas. There are some good sites for excavated ponds, but the sandy substratum makes maintenance difficult. (Capability unit IIIw-4; woodland suitability group 3)

Orangeburg Series

The Orangeburg series consists of deep, nearly level to sloping, well-drained, friable soils. The slope range is 0 to 10 percent. These soils formed in thick beds of unconsolidated, acid sandy loams and sandy clay loams. Originally, they were covered by a forest of loblolly

pine and a few oaks. The understory consisted of brush and shrubs.

The surface layer is grayish brown to dark brown, friable, and about 15 inches thick. The subsoil is dark-red sandy clay loam.

These soils are closely related to Magnolia and Ruston soils. They are lighter colored and more sandy than Magnolia soils and have a thicker surface layer. They have a redder subsoil than Ruston soils.

Orangeburg soils are low in organic-matter content, have a moderate natural supply of plant nutrients, and are strongly acid. They are moderately permeable and have a moderate available moisture capacity. Except for tobacco, they are suited to most of the locally grown commercial crops. Crops respond well to applications of fertilizer.

Orangeburg soils make up less than 1 percent of the total area of Lee County. They occupy gently sloping ridgetops and extend part of the way down the steeper side slopes. Most of the acreage is now cultivated, but some steep, eroded areas are in second-growth loblolly pine and brush.

Orangeburg loamy sand, 0 to 2 percent slopes (OrA).—This deep, well-drained soil is on the broad, nearly level ridgetops.

Profile—

- 0 to 15 inches, dark-brown, friable loamy sand.
- 15 to 70 inches, dark-red sandy clay loam; blocky structure; yellowish-red mottles prominent in the lower part; coarse quartz grains and fine gravel are more numerous with depth.
- 70 to 100 inches +, red light sandy clay loam mottled with yellowish red.

If the organic-matter content is low, the surface soil is grayish brown or brown rather than dark brown. The subsoil is dark red to yellowish red. In places it is sandy clay. Coarse quartz grains and fine quartz gravel are common in places. Included are large areas in which the surface layer is sandy loam.

This soil is moderately fertile and contains a moderate amount of organic matter in the surface layer. The infiltration rate is moderate, permeability is moderate, and the water-holding capacity is moderately high. Tilth is good.

Except for tobacco, this soil is suited to most of the crops grown commercially. Under good management, it can be cropped intensively. It is well suited to mechanized farming, and crops respond well to fertilizer and good management. Most of the acreage is cultivated. (Capability unit I-1; woodland suitability group 2)

Orangeburg loamy sand, 2 to 6 percent slopes (OrB).—Its stronger slope and moderate rate of runoff distinguish this soil from Orangeburg loamy sand, 0 to 2 percent slopes. It is well suited to cultivated crops. Erosion is a moderate hazard. (Capability unit IIe-1; woodland suitability group 2)

Orangeburg loamy sand, 2 to 6 percent slopes, eroded (OrB2).—This soil has a stronger slope and a thinner, redder surface layer than Orangeburg loamy sand, 0 to 2 percent slopes. It is suited to the same crops. Under good management, yields are about the same. Erosion is a moderate hazard. (Capability unit IIe-1; woodland suitability group 2)

Orangeburg loamy sand, 6 to 10 percent slopes, eroded (OrC2).—This soil has a much stronger slope and a thinner and redder surface layer than Orangeburg loamy

sand, 0 to 2 percent slopes. To a depth of 6 to 8 inches, the surface layer commonly is reddish-brown loamy sand. Some severely eroded areas, in which the surface layer is dark-red to yellowish-red sandy clay loam, are included. There are a few shallow gullies. Some small areas that have a slope of 10 to 15 percent are also included.

Because of the steeper slope and the small size of most areas, this soil is not so well suited to mechanized farming as Orangeburg loamy sand, 0 to 2 percent slopes. Except for tobacco, it is suited to most of the locally grown commercial crops. Because of the severe erosion hazard, careful management is required to prevent further losses of soil. (Capability unit IIIe-1; woodland suitability group 2)

Plummer Series

The Plummer series consists of gray, deep, nearly level, poorly drained soils. They occur in wet, seepy areas or in depressions at the head of streams and along small streams. They formed in beds of unconsolidated sands. The native vegetation was mostly water oak and blackgum, but it included some cypress and an understory of gallberry, canes, and briers.

The surface layer is dark gray, fairly high in organic-matter content, and thin. The subsoil is gray loamy sand or sand. Except in the surface layer, the organic-matter content is low. The natural supply of plant nutrients is low, and the reaction is strongly acid. Permeability is rapid.

Plummer soils occur throughout Lee County but chiefly in the Sand Hills. Their total area is less than 1,000 acres, and they are not important agriculturally. Most of the acreage is covered by trees and brush similar to that under which the soils formed. Little of the acreage has been cropped or used for pasture.

Plummer loamy sand (Pm).—This nearly level, poorly drained soil commonly occurs at the head of drainageways.

Profile—

- 0 to 2 inches, dark-gray loamy sand; fairly high organic-matter content.
- 2 to 7 inches, gray, loose loamy sand.
- 7 to 40 inches, light-gray, loose sand.

Included in this soil are some very gently sloping areas of colluvial material that are too small to be mapped separately. In places the surface layer is sand.

This soil is not suited to cultivated crops. Added fertilizer is soon leached out, and most areas are hard to drain. Cleared areas can be made fairly productive for pasture. (Capability unit Vw-2; woodland suitability group 9)

Plummer sand, terrace (Pn).—This soil occurs on stream terraces. Its profile is similar to that of Plummer loamy sand in most characteristics. The surface layer is sand or loamy sand.

This soil is not well suited to cultivated crops, chiefly because it is so difficult to drain and fertilizer is leached out so quickly. (Capability unit Vw-2; woodland suitability group 9)

Portsmouth Series

The Portsmouth series consists of deep, nearly level, very poorly drained soils that have a black, organic sur-

face layer. They formed in beds of unconsolidated, acid sands and clays in depressions and along natural drainageways. The native vegetation was chiefly cypress, blackgum, sweetgum, water oak, and yellow-poplar, but it also included some pine.

The black surface layer is 12 to 18 inches thick. The subsoil is gray sandy clay that is mottled with red and brown in some places. Portsmouth soils have a subsoil texture similar to that of Coxville soils, but they generally contain more organic matter in the surface layer and are more poorly drained than Coxville soils.

Portsmouth soils are moderately fertile, strongly acid, and moderately permeable. If adequately drained, they have a high available moisture capacity and are productive agricultural soils. Crops respond well to good management.

These soils make up a little over 1.5 percent of Lee County. Most of the acreage has been cut over, and about one-fourth is used for crops and pasture.

Portsmouth loam (Po).—If adequately drained, this soil is one of the best in the county for truck crops.

Profile—

- 1 inch to 0, partially decomposed forest litter.
- 0 to 14 inches, black, friable loam.
- 14 to 31 inches, gray sandy clay; slightly sticky; contains a few small, soft concretions.
- 31 inches +, light-gray sandy clay loam.

The surface layer is 12 to 18 inches thick. Where the soil has been cultivated for several years, the organic-matter content is lower, and the surface layer is dark gray. In places the gray subsoil is mottled with red and brown. Concretions in the subsoil range from none to many. Included are small areas of Okenee soils, which have a thicker surface layer.

This soil has a moderate supply of plant nutrients, has a high organic-matter content, and is strongly acid. It is moderately permeable. In its natural condition it is too wet for cultivated crops, but it is very productive if it is adequately drained and fertilized. It is well suited to corn, oats, soybeans, and truck crops and to dallisgrass, tall fescue, whiteclover, and annual lespedeza for hay and pasture.

Except in some areas that lack suitable outlets, this soil is drained easily by either tile or open ditches. Lime and fertilizer are required for most crops and pasture. There are some good sites for excavated ponds. (Capability unit IIIw-4; woodland suitability group 9)

Portsmouth sandy loam (Ps).—The surface layer of this soil is sandier and generally contains slightly less organic matter than that of Portsmouth loam. It is suited to the same crops. Management requirements are about the same as for Portsmouth loam. Included are small areas of Okenee soils, which have a thicker surface layer. (Capability unit IIIw-4; woodland suitability group 9)

Rains Series

The Rains series consists of deep, nearly level, poorly drained, gray soils that formed in beds of unconsolidated, acid sands and clays. The native vegetation consisted of water oak, blackgum, maple, and cypress and an understory of canes, bayberry, and briers.

The gray to dark-gray surface layer is 10 to 12 inches thick. The subsoil is gray sandy loam or sandy clay loam

that, in places, is highly mottled. Rains soils are similar to Plummer soils in color and drainage but have a finer textured subsoil.

These soils have a low content of organic matter and plant nutrients. They are acid. Surface runoff is slow, and internal drainage is medium.

Rains soils occupy only 837 acres in Lee County; they occur at the head of streams or drainageways, mostly in the Sand Hills. They are adjacent to Lakeland soils. They are not important agriculturally. Most of the acreage is in cutover timber.

Rains loamy sand (Ra).—This gray, poorly drained soil is along drainageways.

Profile—

- 0 to 12 inches, very dark gray, loose loamy sand.
- 12 to 21 inches, gray, very friable sandy loam; many, medium, yellowish-brown and strong-brown mottles.
- 21 to 28 inches, gray, friable sandy clay loam.
- 28 to 46 inches +, light brownish-gray sandy clay loam and sandy loam.

In a few places the surface layer is sandy loam. The subsoil is sandy loam or sandy clay loam. The amount of mottling varies greatly.

Because this soil has a low natural supply of plant nutrients, has a low organic-matter content, and occurs in places that are hard to drain, it is not well suited to cultivated crops. Generally, its use for pasture is limited by the cost of clearing. On most of it, grazing is possible only during the drier parts of the year. Lime and fertilizer are leached out readily, and large amounts of both are required for pasture. This soil is best used to grow trees; it is well suited to loblolly pine, slash pine, and pond pine. There are some good sites for excavated irrigation pits or ponds. (Capability unit IVw-3; woodland suitability group 6)

Ruston Series

The Ruston series consists of deep, nearly level to sloping, well-drained soils that formed in thick beds of acid sandy loams and sandy clay loams of the Coastal Plain. The native vegetation consisted of loblolly pine, longleaf pine, and some white oak and red oak.

The grayish-brown surface layer is 12 to 30 inches thick. Thick surface phases are recognized where the thickness exceeds 18 inches. The subsoil is strong-brown or yellowish-red sandy clay loam or sandy loam.

Ruston soils are closely associated with Orangeburg soils. They differ in having a grayish-brown surface layer that is 12 to 30 inches thick, whereas Orangeburg soils have a brown surface layer that is 12 to 18 inches thick. The subsoil of Ruston soils is strong brown or yellowish red, and that of the Orangeburg soils is red to dark red.

Ruston soils are important to the agriculture of Lee County, where they occupy nearly level or gently sloping ridgetops and also extend down the steep side slopes. They generally are on higher sites than the surrounding yellow and gray soils. They make up about 3.7 percent of the total area of the county. They are mostly north and west of U.S. Highway No. 15, but small areas occur throughout the county, chiefly on the high ridges close to the breaks to the streams. Except for a few steep, eroded areas

in second-growth loblolly pine and longleaf pine, most of the acreage is cultivated.

These soils are suited to most of the commonly grown commercial crops. Crops respond well to applications of fertilizer and to other good management.

Ruston loamy sand, 0 to 2 percent slopes (RsA).—This deep, well-drained soil is on broad, nearly level areas in the uplands.

Profile—

- 0 to 16 inches, dark grayish-brown, very friable loamy sand or sandy loam; at plow-layer depth, the color grades to light yellowish brown.
- 16 to 35 inches, strong-brown, grading at 20 inches to yellowish-red sandy clay loam; friable.
- 35 inches +, red and strong-brown sandy clay loam; pockets of sand and thin layers of clay.

The color of the 12- to 18-inch surface layer ranges from dark grayish brown to light yellowish brown. In places there are many small concretions in the profile and on the surface. The subsoil is sandy loam or sandy clay loam. The total depth of the profile through the subsoil is 30 to 50 inches.

This soil is medium acid and has a moderately low content of organic matter and a moderate natural supply of plant nutrients. The rate of infiltration and the rate of movement of water through the soil are moderate to moderately high. The available moisture capacity is moderate. Because of these favorable moisture conditions and good tilth, this soil is well suited to intensive use and to a wide variety of crops. Crops respond well to adequate fertilization. Cotton, corn, small grains, soybeans, and truck crops are suitable crops, and Coastal bermudagrass and bahiagrass grown with sericea lespedeza are productive hay and pasture plants. Almost all the acreage is cultivated. (Capability unit I-1; woodland suitability group 2)

Ruston loamy sand, 2 to 6 percent slopes (RsB).—This gently sloping soil has a slightly thinner surface layer than Ruston loamy sand, 0 to 2 percent slopes. Surface runoff is rapid enough to cause a moderate erosion hazard.

All the crops commonly grown on the nearly level Ruston loamy sand can be grown on this soil. Under good management, yields are only slightly lower, but careful management is needed to control erosion. Even under careful management, it is not practical to grow row crops continuously. (Capability unit IIe-1; woodland suitability group 2)

Ruston loamy sand, 2 to 6 percent slopes, eroded (RsB2).—The surface layer of this soil is 4 to 9 inches thick. In many places plowing has resulted in the mixing of some subsoil with the surface soil, and in these places the surface layer has a browner color. In some small areas, chiefly along the edges of fields and on the lower side of old bench terraces, the subsoil is exposed. This soil is suited to the same crops and has the same limitations in use as the less eroded Ruston loamy sand, 2 to 6 percent slopes. Yields, however, are a little lower. (Capability unit IIe-1; woodland suitability group 2)

Ruston loamy sand, 6 to 10 percent slopes (RsC).—This sloping soil has a thinner surface layer than Ruston loamy sand, 0 to 2 percent slopes. It occurs in small areas within broad areas of the less sloping Ruston soils. The total acreage is small.

This soil is suited to the same crops as the less sloping Ruston soils, but, because of its lower available moisture capacity, yields are correspondingly lower. Because of the rapid rate of runoff, erosion is a serious hazard. Row crops should be grown no more often than 1 year in every 3 or 4 years. (Capability unit IIIe-1; woodland suitability group 2)

Ruston loamy sand, 6 to 10 percent slopes, eroded (RsC2).—The surface layer of this soil is browner than that of Ruston loamy sand, 0 to 2 percent slopes. It is 6 to 8 inches thick and is a mixture of the original surface soil and subsoil. Some severely eroded areas, in which the surface layer is strong-brown or yellowish-red sandy loam or sandy clay loam, are included. This soil occurs in small areas within broad areas of the smoother Ruston soils. The total acreage is small.

This soil is suited to the same crops as the less sloping Ruston soils. Because of its lower available moisture capacity and its slightly less favorable tilth, crop yields are lower. Erosion is a serious hazard. Supplementary water control measures are necessary, and row crops cannot be grown frequently. The small size of the areas makes the operation of large machines impractical. (Capability unit IIIe-1; woodland suitability group 2)

Ruston loamy sand, thick surface, 0 to 2 percent slopes (RtA).—This soil has a thicker, sandier surface layer and a slightly sandier subsoil than Ruston loamy sand, 0 to 2 percent slopes. The surface layer is dark grayish-brown, loose loamy sand. It is 18 to 30 inches thick. The subsoil is strong-brown grading to yellowish-red, friable sandy clay loam. Although the plow layer is very easily worked, this soil has a lower available moisture capacity than the normal Ruston soils, and it is less retentive of plant nutrients. It is suited to the same crops as Ruston loamy sand, 0 to 2 percent slopes, but yields are lower. Wind erosion is active in areas that do not have a good plant cover. (Capability unit IIs-1; woodland suitability group 2)

Ruston loamy sand, thick surface, 2 to 6 percent slopes (RtB).—This gently sloping soil has a thicker surface layer and a slightly sandier subsoil than Ruston loamy sand, 2 to 6 percent slopes. It is more subject to both wind and water erosion, is less retentive of added plant nutrients, and has a lower available moisture capacity than Ruston loamy sand, 0 to 2 percent slopes.

This soil is well suited to sweetpotatoes, watermelons, velvetbeans, and rye, and is fairly well suited to cotton, corn, tobacco, soybeans, peanuts, and oats. Coastal bermudagrass, bahiagrass, and sericea lespedeza are suitable hay and pasture plants. If cropped, this soil requires careful management to control erosion. In general, it should be in a close-growing crop at least half the time. Loblolly pine and slash pine grow well. (Capability unit IIs-1; woodland suitability group 2)

Ruston loamy sand, thick surface, 6 to 10 percent slopes (RtC).—This soil has a stronger slope, a thicker surface layer, and a somewhat sandier subsoil than Ruston loamy sand, 0 to 2 percent slopes. It is droughtier, and added plant nutrients are leached out more rapidly. The surface layer is 18 to 30 inches thick. A few areas in which the subsoil is redder than normal are included in this soil.

The available moisture capacity of this soil is lower than that of Ruston loamy sand, 0 to 2 percent slopes. The percolation rate is a little more rapid.

This soil is suited to the same crops as the less sloping and thinner Ruston soils, but yields are lower. Organic matter and plant nutrients must be replaced continually if productivity is to be maintained at a fairly high level. In general, the soil should be in a close-growing crop 2 years in every 3 years. Loblolly pine and slash pine grow well. (Capability unit IIIe-5; woodland suitability group 2)

Rutlege Series

The Rutlege series consists of deep, nearly level, very poorly drained soils that have a black, organic surface layer. These soils formed in beds of sands and loamy sands of the Coastal Plain. They occur in depressions and bays or on low flats at the head of drainageways. The water table is at or near the surface most of the time. The native vegetation was cypress, blackgum, water oak, yellow-poplar, and sweetgum, and a few loblolly pine and pond pine trees.

The surface layer is black, high in organic-matter content, and 10 to 24 inches thick. The subsoil is dark-gray loamy sand or sandy loam.

Rutlege soils have a thick organic surface layer similar to that of Portsmouth soils but have a coarser textured subsurface layer. Their gray to dark-gray subsurface layer is similar to that of Plummer soils, but their surface layer is thicker and much higher in organic-matter content. Rutlege soils are more poorly drained than Plummer soils.

These soils are high in organic-matter content, but they have a low natural supply of plant nutrients. They are strongly acid. Permeability is rapid. The infiltration rate and the available moisture capacity are moderate.

The total area of Rutlege soils in Lee County is very small. Most of the acreage is in cutover hardwood forest.

Rutlege loamy sand (Ru).—This dark, poorly drained soil is in depressions and at the head of drainageways. Profile—

- 0 to 12 inches, black loamy sand; high in organic-matter content.
- 12 to 16 inches, dark-gray, loose loamy sand; gradual lower boundary.
- 16 to 36 inches +, gray loamy sand; loose.

The surface layer is 10 to 24 inches thick. Its range in texture is from loamy sand to loam. In a few places the subsoil is sandy loam.

Rutlege loamy sand is strongly acid and has a low natural supply of plant nutrients, but its surface layer has a high organic-matter content. Permeability is rapid, and the available moisture capacity is low if the soil is drained. In undrained areas, the water table is at or near the surface most of the time. In the driest part of the year, it is 1 to 3 feet below the surface.

This soil is easily drained by tile or open ditches, but many areas do not have suitable outlets. If drained, it can be used for crops. Yields of corn, oats, soybeans, and truck crops are fair, but lime and fertilizer are required. Dallisgrass, tall fescue, whiteclover, and annual lespedeza are the best hay and pasture plants, but large

amounts of lime and fertilizer are needed for high yields. Most of the acreage is best used for pasture or for loblolly pine and pond pine forest. (Capability unit Vw-2; woodland suitability group 9)

Swamp

Swamp (Sw).—This land type occurs along the larger streams in the county. The areas are flooded frequently, and water stands on them most of the time. The surface layer ranges from sandy clay to clay and from gray to brown or black. The organic-matter content varies, and in some areas there is a thick, black organic layer that is underlain by light-gray sand or clay.

All of this land type is covered by hardwood forest (fig. 11). This is the use to which it is best suited, but harvesting of the timber is difficult. It is impractical to drain any of the areas. (Capability unit VIIw-1; woodland suitability group 8)

Vaocluse Series

Soils in the Vaocluse series are shallow to moderately deep, gently sloping to moderately steep, and well drained. They have a compact, slightly cemented subsoil. They formed in beds of unconsolidated sands and clays of the Coastal Plain. The native vegetation consisted of longleaf pine, loblolly pine, turkey oak, and blackjack oak, and an understory of various grasses and shrubs.

The surface layer is gray to brown and 6 to 18 inches thick. Ordinarily, the subsoil consists of 6 to 18 inches of red clay loam. In some areas the subsoil is lacking and the surface layer lies directly over the substratum. These soils are acid and have a low organic-matter content and a low natural supply of plant nutrients. Their productivity is limited.

Vaocluse soils are similar to Ruston soils in color. Their subsoil, however, is compact and slightly cemented rather than friable like that of Ruston soils.

These soils occupy about 2.5 percent of the total area of Lee County. They are mostly in the Sand Hills. There is also a small acreage along the breaks of the uplands to the major drainageways and streams in the upper and middle Coastal Plain. Most of the acreage is in cutover longleaf pine and loblolly pine. All the less sloping areas have been cleared and cropped at some time, but most of them have reverted to woodland.

Vaocluse loamy sand, 2 to 6 percent slopes (VaB).—This well-drained soil is shallow to moderately deep to the very compact material.

Profile—

0 to 11 inches, brown loamy sand; grades with depth to light yellowish brown.

11 to 20 inches, red clay loam; breaks to medium-sized blocky lumps with rounded edges; compact and brittle.

20 to 34 inches +, red sandy clay loam; very firm and compact in place; crushes to a loose mass.

The very dark gray to light yellowish-brown surface layer is 6 to 18 inches thick. Its texture is loamy sand or sandy loam. The compact clay loam subsoil ordinarily is 6 to 18 inches thick. In a few places there is no compact layer and the loamy sand or sandy loam rests on the substratum. The subsoil color ranges from yellowish red to reddish brown.



Figure 11.—Stand of mixed hardwoods on an area of Swamp. Most areas are in cutover hardwoods.

This soil has a low natural supply of plant nutrients and a low content of organic matter. It is medium acid to strongly acid. Below a depth of about 12 inches, permeability is slow. Because of the slope and the shallowness to the compact layer, the available moisture capacity is low. Erosion is a moderate hazard.

Under good management, this soil is moderately productive of oats, cotton, corn, rye, and soybeans. Bermuda-grass, bahiagrass, sericea lespedeza, and crimson clover are among the better suited hay and pasture plants. Because of the erosion hazard, row crops should not be grown frequently. If the soil is cropped, some supplementary water control measures are needed to control erosion. (Capability unit IIe-4; woodland suitability group 11)

Vaocluse loamy sand, 2 to 6 percent slopes, eroded (VaB2).—The surface layer of this soil is brown to reddish-brown loamy sand or sandy loam. It is 4 to 6 inches thick. Much of it is a mixture of the original surface layer and subsoil material. There are patches where the subsoil is exposed and the plow layer is red clay loam.

Because the compact material is closer to the surface, this soil is more difficult to work and is less productive than Vaocluse loamy sand, 2 to 6 percent slopes. It is suited to about the same crops, but yields are lower. Erosion is a greater hazard. (Capability unit IIIe-4; woodland suitability group 11)

Vaocluse loamy sand, 6 to 10 percent slopes (VcC).—Because of the stronger slope, the compact material is a little closer to the surface in this soil than in Vaocluse loamy sand, 2 to 6 percent slopes. This soil is suited to the same crops, but yields are lower, erosion is more of a hazard, and field operations are a little more difficult. Row crops should not be grown frequently. Very careful management is needed to control erosion in cultivated fields. (Capability unit IIIe-4; woodland suitability group 11)

Vaocluse loamy sand, 6 to 10 percent slopes, eroded (VcC2).—The surface layer of this soil is brown to reddish-brown loamy sand or sandy loam, 3 to 6 inches thick. It is mostly a mixture of the original surface layer and subsoil material. In some patches or spots where the subsoil is exposed, the plow layer is red clay loam.

Because the compact material is so close to the surface, this soil is difficult to work. Because of this shallowness and the strong slope, erosion is a serious hazard. The low available moisture capacity greatly limits yields of all crops.

This is the most extensive of the Vaocluse soils in the county. Although all the acreage has been cropped at some time, most of the acreage is not in cultivation now. This soil is poorly suited to row crops, but it can be used for permanent pasture or for pine woodland. (Capability unit IVe-4; woodland suitability group 11)

Vaocluse loamy sand, 10 to 15 percent slopes (VcD).—This strongly sloping soil has a thinner surface layer than Vaocluse loamy sand, 2 to 6 percent slopes. Most of the areas are 10 to 15 acres in size, but the total acreage is small. Most of the acreage is now in cutover forest of pine and scrub oak.

This soil is droughty. Because of the strong slope, erosion is a very severe hazard in cultivated areas. Small grains, such as oats and rye, are among the better suited crops, but perennial vegetation, such as sericea lespedeza, bahiagrass, Coastal bermudagrass, or trees probably constitute a better use for most of the acreage. The site index of Vaocluse soils for loblolly pine is lower than that of most of the soils in the county. Windthrow is a significant hazard. (Capability unit IVe-4; woodland suitability group 11)

Vaocluse loamy sand, 10 to 15 percent slopes, eroded (VcD2).—The surface layer of this strongly sloping soil is only 4 to 6 inches thick, and there are many galled spots. Most of the areas are only about 5 acres in size. This soil is suited to bahiagrass, bermudagrass, and sericea lespedeza for pasture, but its low available moisture capacity greatly limits productivity. This soil is also suited to growing trees. It is hard to establish trees on the galled spots, however, and windthrow is a significant hazard. (Capability unit VIe-2; woodland suitability group 11)

Vaocluse loamy sand, 15 to 25 percent slopes, eroded (VcE2).—This moderately steep soil occurs along the breaks of streams and on abrupt escarpments within areas of less sloping Vaocluse soils. Most areas are 5 to 10 acres in size. Because of erosion, the surface layer is only 4 to 7 inches thick and consists mostly of a mixture of the original surface layer and subsoil material. This soil is not suited to cultivated crops, but it can be made moderately productive for pasture. Its low available moisture capacity is the chief limitation. Bermudagrass, bahiagrass, and sericea lespedeza are suitable pasture plants. This soil is also suited to growing pine trees, but

its suitability is limited somewhat by the lack of moisture and the hazard of windthrow. (Capability unit VIe-2; woodland suitability group 11)

Vaocluse loamy sand, thick surface, 2 to 6 percent slopes (VtB).—The surface layer of this soil is 18 to 30 inches thick, whereas that of Vaocluse loamy sand, 2 to 6 percent slopes, is less than 18 inches thick. Although this soil occurs in areas larger than those of the thinner soil, the total acreage is small.

This soil can be used and managed in about the same way as Vaocluse loamy sand, 2 to 6 percent slopes. Because it is more droughty, crop yields are lower. Water erosion is less of a hazard because of the thicker, rapidly permeable surface layer, but wind erosion is a hazard in exposed cultivated areas. (Capability unit IIIe-4; woodland suitability group 11)

Vaocluse loamy sand, thick surface, 6 to 15 percent slopes (VtD).—Because of its thicker surface layer and steeper slope, this soil is more droughty and less productive than Vaocluse loamy sand, 2 to 6 percent slopes. Row crops should be grown only 1 year in every 4 years. Large fields especially should be in perennial vegetation, such as bermudagrass and bahiagrass, most of the time. Starting the third year after the rotation is established, one-fourth of a large field can be planted to row crops each year. Sericea lespedeza is also a suitable hay or pasture plant. Most of the acreage in this soil probably is best used as pine forest. The total acreage is small, and most of it is now in cutover forest. (Capability unit IVe-4; woodland suitability group 11)

Vaocluse sandy loam, 6 to 10 percent slopes, severely eroded (Vyc3).—The plow layer of this soil is reddish-brown sandy loam. It is 4 to 5 inches thick. In the many patches or spots where the subsoil is exposed, the plow layer is red clay loam. The very firm, compact sandy clay loam layer is at a depth of about 12 inches.

This soil has poor tilth, a very low organic-matter content, and a low natural supply of plant nutrients. It has a low available moisture capacity. Because of these unfavorable qualities and its strong slope, it is not suited to crops that require tillage. It is not very productive of pasture grasses. Because the compact layer is so close to the surface, trees grow slowly and windthrow is a hazard. (Capability unit VIe-2; woodland suitability group 11)

Wahee Series

Soils in the Wahee series are moderately deep, nearly level, and moderately well drained to somewhat poorly drained. They formed on stream terraces in sediments that came from soils of the uplands in both the Coastal Plain and the Piedmont Plateau. The native vegetation was a forest of longleaf pine, loblolly pine, red oak, white oak, some sweetgum, and some yellow-poplar.

The gray to pale-brown surface layer is 5 to 12 inches thick. The subsoil is yellowish-brown silty clay. Mottled, very firm clay or silty clay occurs at a depth of about 24 inches.

Wahee soils are finer textured throughout than the nearby Izagora soils. They are better drained than Leaf soils, with which they occur on stream terraces.

These soils have a moderate organic-matter content and a moderate natural supply of plant nutrients. They are

strongly acid. Permeability is slow; the infiltration rate is slow, and internal drainage is slow. The available moisture capacity is moderate.

The total area of these soils in Lee County is small. About half the acreage is now used for cultivated crops.

Wahee fine sandy loam (Wc).—This fine-textured, moderately well drained to somewhat poorly drained soil is on the Lynches River terrace.

Profile—

0 to 6 inches, very pale brown, friable fine sandy loam; abrupt lower boundary.

6 to 24 inches, yellowish-brown silty clay; a few red mottles; blocky structure.

24 inches +, yellowish-brown, light-gray, and red, very firm clay or silty clay.

The pale-brown to gray surface layer is 5 to 12 inches thick. The texture is fine sandy loam to silt loam. The subsoil ranges from sandy clay to clay in texture and is 16 to 30 inches thick. In most places mottling occurs at a depth of 10 to 15 inches, but in some places there are mottles in the upper part of the subsoil. A few areas have a slope of 2 to 6 percent.

This soil is suited to oats, corn, soybeans, and annual lespedeza. Because of its very firm subsoil and the somewhat prolonged wetness in spring and after periods of heavy rain, it is less well suited to cotton and not at all suited to tobacco. The more nearly level areas of this soil can be drained by shallow ditches. Tile drains are not effective, because of the slowly permeable subsoil. This soil is low in organic-matter content and in its natural supply of plant nutrients, but crops respond moderately well to applications of fertilizer. Bermudagrass, bahiagrass, whiteclover, and common lespedeza are suitable pasture plants. Under good management, which includes adequate applications of fertilizer and lime and seeding, pastures have a fairly high carrying capacity. Pine trees grow well. (Capability unit IIIw-3; woodland suitability group 3)

Wehadkee Series

The Wehadkee series consists of nearly level, poorly drained soils on first bottoms. They formed in fine-textured materials washed from soils on the uplands in the Piedmont Plateau and the Coastal Plain. The native vegetation consisted of red oak, white oak, blackgum, sweetgum, yellow-poplar, maple, and scattered loblolly pine trees.

The surface layer is grayish brown and is 2 to 4 inches thick. It is underlain by grayish-brown silty clay mottled with gray. The organic-matter content and the natural supply of plant nutrients are moderate. Permeability is slow, and the available moisture capacity is moderately high. The reaction is medium acid to strongly acid.

In Lee County, Wehadkee soils occur at the lowest elevations along the Lynches River. Water stands on or near the surface much of the time. The native forest on these soils has been cut over, and most of the acreage is now in second-growth hardwoods.

Wehadkee silt loam (We).—This poorly drained soil on bottom lands is subject to frequent overflow.

Profile—

0 to 2 inches, very dark grayish-brown silt loam; friable.

2 to 14 inches, dark grayish-brown silty clay; brownish-yellow and gray mottles; plastic and sticky.

14 to 32 inches, dark grayish-brown silty clay; more strongly mottled than the layer above.

Sandy overwash covers some areas, and there are also a few shallow washouts. The position of the water table depends on the general wetness in any given period; it ranges from at or above the surface to a depth of 2 or 3 feet.

This soil is fertile and free of any hazard of erosion, but it is too wet for cultivated crops. In most places drainage is not feasible, because of the lack of suitable outlets. The risk of flooding is great. Some areas can be made productive for pasture. To get a productive stand of pine trees, some water control measures are necessary. (Capability group VIw-1; woodland suitability group 8)

Formation, Morphology, and Classification of the Soils

In this section, the factors that have affected the formation and composition of the soils in Lee County are discussed, and the soils are classified by higher categories. Complete physical and chemical data for the soils are not available; therefore, the discussion of morphology and classification is incomplete.

Factors of Soil Formation

The characteristics of the soil at any given point are determined by (1) the physical and mineralogical composition of the parent material, (2) the climate in which the soil material has accumulated and in which the soil-forming processes have taken place, (3) the plant and animal life in and on the soil, (4) the relief or lay of the land, and (5) the length of time in which the various changes have occurred. Plants, climate, and relief modify the characteristics of the soil through their effect on parent material.

The active forces that gradually form a soil from parent material are climate and plant and animal life. Relief, in most places, largely controls natural drainage and strongly influences aeration, runoff, erosion, and exposure to sun and wind. It, therefore, influences the effectiveness of the active soil-forming processes. If climate and living organisms have not been in force long enough to produce a soil that is nearly in equilibrium with its environment, the soil is considered young. When a soil has developed certain definite characteristics and has a well-developed profile, it is said to be mature.

Generally, soil-forming factors are complex. Each force interacts with others, and slowly, but constantly, changes are brought about. The soil itself is a complex substance; it is constantly changing and never reaches a static condition. It passes slowly through stages that may be considered as youth and maturity and even old age. Thus, the character and thickness of a soil depends upon the intensity of the soil-forming processes, the length of time during which the processes have acted, and the resistance of the parent material to change.

At any stage of its history, a soil may be affected by mechanical agencies. The surface layer may be wholly or partly removed by erosion and the material beneath exposed. Then, the soil-making forces begin working on the exposed material to form a new surface layer. Whether or not erosion benefits the growth of plants depends on the rate of removal and on the supply of plant nutrients available in the new surface layer. Normal erosion may benefit the soil; accelerated erosion, generally, is caused by misuse of the land and is almost always detrimental.

Parent material

Lee County is in the upper and middle parts of the Atlantic Coastal Plain of northeastern South Carolina. It is in the Red-Yellow Podzolic soil zone of the southeastern part of the United States (6). The soils have formed from materials carried in the waters of the Atlantic Ocean and coastal streams and deposited in beds of unconsolidated, acid sands and clays. In Lee County these deposits were covered later by a forest of pines and hardwoods.

Geologically, the area consists of marine terraces that probably were also under some fluvial influence in the Pleistocene epoch. There are three marine terraces in the county: the Brandywine, the Coharie, and the Sunderland (2). The Sand Hills section in the northern part of the county is considered a part of the Brandywine and Coharie terraces, but the material may have been reworked by wind or water after it was deposited. The elevations of the terraces above the present sea level are as follows: Brandywine, 215 to 270 feet; Coharie, 170 to 215 feet; and Sunderland, 100 to 170 feet. The unconsolidated sediments that were deposited on these terraces by the ocean vary widely in texture—sands, sandy clay loams, and sandy clays.

Alluvial materials, consisting of sand, gravel, silt, and clay, have been deposited in the valleys of all the major streams and in the valleys of some of their tributaries. These recent deposits show little evidence of soil development.

Colluvial deposits, made up largely of sandy materials, occur along the upper drainageways on the uplands. Soils formed from them are generally sandy and do not have well-developed profiles.

Climate

Lee County has a warm, humid, continental type of climate. The average annual temperature is about 63 degrees. Rainfall is abundant. It averages 44 inches a year. The amount of rainfall is slightly greater in spring and summer than in fall and winter.

Because the climate is warm and the soil is moist much of the time, chemical reactions are rapid. The large amount of rainfall promotes the removal of soluble materials by leaching and the downward movement of the less soluble, fine materials. Weathering is further hastened by the lack of any prolonged periods during which the soil is frozen.

Some of the variations in plant and animal life are caused by the action of climatic forces on the soil material. To that extent, climate influences the changes in the soil that are brought about by differences in the plant and animal population.

Living organisms

Plants, micro-organisms, earthworms, and other forms of life that live on and in the soil are active in the soil-forming processes. The changes they bring about depend mainly on the kind of life processes peculiar to each. The kinds of plants and animals are determined by the climate, parent material, relief, age of the soil, and by other organisms.

Generally, the kind of soil in an area varies according to the kind of vegetation. In this county the soils have formed under three broad types of vegetation: (1) pine-hardwood forest, (2) cypress-swamp hardwood forest with some pond pine, and (3) southern whitecedar-swamp hardwood forest with some cypress and pond pine.

The soils formed under the pine-hardwood type are the most extensive. These are mineral soils that are well drained to poorly drained. They have a light-colored surface layer in which the content of organic matter is about 1 to 3 percent. Mineral soils also formed under the cypress-swamp hardwood type in which there was some pond pine. These soils are poorly drained. They have a surface layer that is dark gray to black; the content of organic matter in this layer ranges from 5 to 15 percent in forested areas. In both groups of soils, the water table is at the surface part of the time, but for significant periods it is low enough to permit oxidation of the organic matter.

In a few small swampy areas, the soils have a surface layer high in organic-matter content. These soils formed under the southern whitecedar-swamp hardwood type in which there was some pond pine and cypress. The surface layer of these soils has an organic-matter content of 30 to 80 percent. These soils formed where water stood on the surface or was near the surface most of the time.

Relief

Relief strongly influences drainage, aeration, runoff, erosion, and exposure to sun and wind. By its control of natural drainage, relief serves as a modifying factor in soil formation. Because of this, several different kinds of soil may form from similar parent material. Most of Lee County is a nearly level to gently sloping plain. There are, however, four general landscapes in the county, distinguished by differences in the lay of the land, that affect the formation of the soils. These landscapes are described as follows:

(1) The Sand Hills, which have a rolling topography and are deeply dissected by streams. In this area the soils on the ridges are deep and sandy, but those on the slopes adjacent to the streams are shallow to moderately deep.

(2) Gently sloping to sloping, moderately dissected areas below the Sand Hills. Here, the soils are mostly well drained and deep.

(3) Broad, slightly dissected, nearly level areas between streams. Most of the soils have a yellow to gray color, and many are distinctly mottled. They are deep and moderately well drained to poorly drained.

(4) Areas on valley floors and on stream bottoms and low terraces. The soils in these areas are young, are predominantly gray (gleyed), and have poorly defined genetic layers.

Time

The degree of horizon differentiation in the soil profile is the chief measure of the effect of time in the formation of soils. Several factors, however, affect the length of time required for a soil to form. In warm, humid areas, such as Lee County, less time is required for a soil to form a distinct profile than in dry or cold regions. Also, less time is required for a soil to form a distinct profile in moderately fine textured Coastal Plain deposits than in coarse-textured deposits. The soils of Lee County range from young and only slightly developed to mature and well developed, but soil maturity is not so striking as in some older landscapes.

Morphology and Classification of the Soils

One of the objectives of a soil survey is to develop a taxonomic classification that will show the relationship of the soils in an area to one another and to soils in other areas. Such a classification, based on common characteristics, is necessary because there are so many different kinds of soils that it would be difficult to remember the characteristics of all of them. If soils are placed in a few groups, each group having selected characteristics in common, their general nature can be remembered more easily.

In the comprehensive system of soil classification currently followed in the United States (7), soils are placed in six categories. Beginning with the highest, the six categories are the order, suborder, great soil group, family, series, and type. In the highest category, all the soils in the country are grouped into three orders—zonal, intrazonal, and azonal—whereas thousands of soil types are recognized in the lowest category. The categories of suborder and family have never been fully developed and thus have been little used. Attention has been given mainly to the classification of soils into soil types and series within counties or comparable areas and to the subsequent grouping of series into great soil groups.

The lower categories of series and type are defined in the section "How Soils are Mapped, Named, and Classified." The soil phase, a subdivision of the soil type, is also defined in that section.

All three soil orders and six great soil groups are represented in Lee County. Table 9 shows the orders, the great soil groups, and the soil series in each great soil group and gives pertinent information about the soils. A representative profile of a soil in each series is described in this section, and the permissible range of characteristics for each series is given. The special terms used to describe the color, texture, structure, consistence, and reaction of the horizons in the profile and the width and shape of the boundaries between the horizons are defined in the Glossary.

TABLE 9.—*Characteristics and genetic relationships of the soil series*

ZONAL						
Great soil group and series	Parent material	Slope range	Color and texture of the surface layer and subsoil ¹	Natural soil drainage	Permeability	Available moisture capacity
Red-Yellow Podzolic soils: Central concept—						
Cahaba.....	Old general alluvium (stream terraces).	Percent 0 to 2	Dark grayish-brown sandy loam over strong-brown to yellowish-red sandy clay loam.	Good	Moderate.....	Moderate.
Faceville.....	Unconsolidated sands and clays.	0 to 10	Dark grayish-brown loamy sand over strong-brown to yellowish-red sandy clay.	Good...	Moderate.....	Moderate.
Gilead.....	Unconsolidated sands and clays.	0 to 15	Gray to grayish-brown loamy sand over brownish-yellow, red, and yellowish-brown sandy clay loam.	Good.....	Moderate to slow.	Moderate.
Goldsboro.....	Unconsolidated sands and clays.	0 to 2	Dark-gray loamy sand over yellowish-brown sandy clay loam mottled with brownish gray.	Moderately good.	Moderate.....	Moderate.
Izagora.....	Old general alluvium (stream terraces).	0 to 2	Dark-brown sandy loam over light olive-brown sandy clay loam mottled with yellowish-red and gray.	Moderately good to somewhat poor.	Moderate.....	Moderate.
Kalmia.....	Old general alluvium (stream terraces).	0 to 2	Gray to grayish-brown loamy sand over yellowish-brown sandy clay loam.	Good.....	Moderate.....	Moderate.
Magnolia.....	Unconsolidated sands and clays.	0 to 2	Reddish-brown loamy sand over red to dark-red sandy clay.	Good.....	Moderate.....	Moderate.
Marlboro.....	Unconsolidated sands and clays.	0 to 10	Dark grayish-brown loamy sand over yellowish-brown sandy clay.	Good.....	Moderate.....	Moderate.
Norfolk.....	Unconsolidated sands and clays.	0 to 10	Dark grayish-brown loamy sand over yellowish-brown sandy clay loam.	Good.....	Moderate.....	Moderate.
Orangeburg....	Unconsolidated sands and clays.	0 to 10	Grayish-brown loamy sand over red to dark-red sandy clay loam.	Good.....	Moderate.....	Moderate.

See footnote at end of table.

TABLE 9.—*Characteristics and genetic relationships of the soil series*—Continued

ZONAL						
Great soil group and series	Parent material	Slope range	Color and texture of the surface layer and subsoil ¹	Natural soil drainage	Permeability	Available moisture capacity
Ruston.....	Unconsolidated sands and clays.	Percent 0 to 10	Dark grayish-brown loamy sand over strong-brown to yellowish-red sandy clay loam.	Good.....	Moderate.....	Moderate.
Vaughn.....	Unconsolidated sands and clays.	2 to 25	Dark-gray to light yellowish brown loamy sand over reddish-brown to red sandy clay loam or clay.	Good.....	Moderate to slow.	Low.
Red-Yellow Podzolic soils grading to Low-Humic Gley soils— Dunbar.....	Unconsolidated sands and clays.	0 to 2	Dark-gray sandy loam over light brownish-gray, strong-brown, and red sandy clay or sandy clay loam.	Somewhat poor.	Moderate.....	Moderate.
Lynchburg.....	Unconsolidated sands and clays.	0 to 2	Dark-gray sandy loam over gray sandy clay loam mottled with brown and pale yellow.	Somewhat poor.	Moderate.....	Moderate.
Podzols: Lakewood.....	Beds of unconsolidated sands.	0 to 10	Gray sand over yellow to yellowish-brown sand; has a thin, dark-brown B _h horizon.	Excessive.....	Rapid.....	Low.
INTRAZONAL						
Low-Humic Gley soils:						
Coxville.....	Unconsolidated sands and clays.	0 to 2..	Very dark gray loam or sandy loam over gray sandy clay mottled with yellowish brown and red.	Poor.....	Slow.....	Moderate.
Grady.....	Unconsolidated sands and clays.	0 to 2..	Gray to black loam or sandy loam over gray sandy clay loam to clay mottled with brown and red in places.	Poor.....	Slow.....	Moderate.
Myatt.....	Old general alluvium (stream terraces).	0 to 2..	Dark olive-gray sandy loam over gray sandy clay loam mottled with yellowish brown.	Poor.....	Moderate.....	Moderate.
Plummer.....	Beds of unconsolidated sands.	0 to 2	Dark-gray loamy sand over light-gray loamy sand or sand.	Poor.....	Rapid.....	Low.
Rains.....	Unconsolidated sands and clays.	0 to 2..	Very dark gray loamy sand over gray sandy loam mottled with yellowish brown.	Poor.....	Moderate.....	Low.
Wehadkee.....	Recent alluvium (first bottoms).	0 to 2..	Dark-gray silt loam over dark grayish-brown silty clay.	Poor.....	Slow.....	High.
Humic Gley soils:						
Okence.....	Unconsolidated sands and clays.	0 to 2..	Black loam or sandy loam over gray sandy clay loam to clay mottled with brown and yellow.	Very poor....	Moderate.....	Moderate.
Portsmouth.....	Unconsolidated sands and clays.	0 to 2..	Black to dark-gray loam or sandy loam over gray sandy clay mottled with brown and red.	Very poor....	Moderate.....	Moderate.
Rutledge.....	Beds of unconsolidated sands.	0 to 2	Black to very dark gray loamy sand over gray loamy sand to sandy loam.	Very poor....	Rapid.....	Moderate.
Planosols:						
Leaf.....	Old general alluvium (stream terraces).	0 to 2	Gray to black fine sandy loam over gray clay loam to clay mottled with brown and red.	Poor....	Slow.....	Moderate.
Wahce.....	Old general alluvium (stream terraces).	0 to 2	Gray to pale-brown fine sandy loam over yellowish-brown sandy clay mottled with gray and red.	Moderately good to somewhat poor.	Slow.....	Moderate.

See footnote at end of table.

TABLE 9.—*Characteristics and genetic relationships of the soil areas—Continued*

AZONAL						
Great soil group and series	Parent material	Slope range	Color and texture of the surface layer and subsoil ¹	Natural soil drainage	Permeability	Available moisture capacity
Regosols:						
Eustis-----	Beds of unconsolidated sands.	Percent 0 to 10	Light-gray sand to loamy sand over strong-brown to yellowish-red sand or loamy sand.	Excessive-----	Rapid - - -	Low.
Lakeland-----	Beds of unconsolidated sands.	0 to 15	Light-gray to gray sand or loamy sand over yellowish-brown sand or loamy sand.	Excessive-----	Rapid-----	Low.

¹ Color and texture of the surface layer are those of the A₁ or A₂ horizon; color and texture of the subsoil are those of the B₂ horizon.

Zonal, or normal, soils have profiles in near equilibrium with their environment. They developed under good but not excessive drainage from parent material of mixed mineral, physical, and chemical composition. In their characteristics they express the full effects of climate and living organisms. The zonal soils of Lee County are members of the Red-Yellow Podzolic and Podzol great soil groups.

Intrazonal soils have more or less well-developed characteristics that reflect the dominant influence of some local factor, such as relief or parent material, over the effects of climate and living organisms. In most places these soils occur in geographical association with zonal soils. The intrazonal soils in Lee County are members of the Low-Humic Gley, Humic Gley, and Planosol great soil groups.

Azonal soils, commonly because of youth, resistant parent material, or steep topography, lack well-developed profiles. The azonal soils in this county are members of the Regosol great soil group.

Many of the soil series are not representative of the central concept of any great soil group. They represent most nearly one great soil group, but they have some characteristics of another. These series are placed in subgroups of the appropriate great soil group, as shown in table 9.

The classification of the soils in Lee County is based largely on characteristics observed in the field. It may be revised as knowledge about soils increases. Miscellaneous land types, of which there are five in the county (Borrow pits, Gullied land, Local alluvial land, Mixed alluvial land, and Swamp), are not classified in higher categories.

Red-Yellow Podzolic soils

The Red-Yellow Podzolic great soil group consists of well-drained, acid soils that have well-developed profiles. These soils have thin organic (A₀) and organic-mineral (A₁) horizons that overlie a light-colored, bleached (A₂) horizon. The A₂ horizon rests on a more clayey, red, yellowish-red, or yellow B horizon. The parent materials are all more or less siliceous. Coarse reticulate streaks or mottles of red, yellow, brown, and light gray are characteristic of deep horizons of certain of the Red-Yellow Podzolic soils that are underlain by a thick layer of parent material.

In Lee County, the soils that most nearly fit the central concept of Red-Yellow Podzolic soils are in the Cahaba, Faceville, Gilead, Goldsboro, Izagora, Kalmia, Magnolia, Marlboro, Norfolk, Orangeburg, Ruston, and Vauluse series. The Dunbar and Lynchburg soils are classified as Red-Yellow Podzolic soils, but they also have some characteristics of Low-Humic Gley soils.

Red-Yellow Podzolic soils have formed under deciduous, coniferous, or mixed forests in a humid, warm-temperate climate. Under these conditions the decomposition of organic matter and the leaching of plant nutrients is rapid. Consequently, the soils are acid to very strongly acid and are low in calcium, magnesium, and other bases. The clay fraction commonly is dominated by kaolinite, and it generally contains moderate to large amounts of free iron oxides or hydroxides, or it may contain small amounts of aluminum. Hydrous mica, montmorillonite, or both, may form part of the clay fraction in some of the soils. The base-exchange capacity of these soils ranges from 8 to 20 milliequivalents per 100 grams; the degree of base saturation is less than 35 percent and generally is about 15 percent.

Differences in morphology among the Red-Yellow Podzolic soils in the county are largely, but not entirely, associated with the nature of the parent materials, especially with their texture. In cultivated areas, the soil materials in the A₀ and A₁ horizons have been mixed so that they are no longer distinguishable. Where accelerated erosion has occurred, much or all of the A horizon has been removed. In a few members of the group, especially in the more sandy soils, there is no horizon that has reticulate streaks or mottles.

Following are descriptions of profiles of the Red-Yellow Podzolic soils in Lee County.

Profile of Cahaba sandy loam on a farm 10 miles northeast of Bishopville and 2 miles east of Clyburn's store, on the Lynches River terrace:

- A₀ 0 to 6 inches, brown (10YR 5/3) sandy loam; weak, fine, granular structure; very friable; many fine roots and pores; clear, smooth boundary.
- A₂ 6 to 13 inches, light yellowish-brown (10YR 6/4) sandy loam; weak, fine, granular structure; very friable; many fine roots and pores; clear, smooth boundary.
- B₁ 13 to 18 inches, yellowish-red (5YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; clear, smooth boundary.

- B₂ 18 to 34 inches, yellowish-red (5YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; patchy clay films; high content of kaolin clay; many root holes and pores; gradual, smooth boundary.
- C 34 inches +, red (2.5YR 4/6) sandy clay and sandy clay loams; massive; few, medium, prominent, brownish-yellow mottles.

The A_p horizon is 12 to 18 inches thick and dark grayish brown to light yellowish brown, depending on the content of organic matter and on whether or not the soil has been cultivated. The color of the subsoil ranges from strong brown to yellowish red. Slopes range from 0 to 6 percent but are mostly from 0 to 2 percent. In some places this soil is underlain by sand at a depth of 36 to 60 inches.

Profile of Faceville loamy sand in a cultivated field 2 miles west of Bishopville and 300 yards south of State Highway No. 34:

- A_p 0 to 9 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; very friable; many fine roots and pores; abrupt, smooth boundary; layer is 6 to 12 inches thick.
- B₂ 9 to 40 inches, yellowish-red (5YR 4/8) sandy clay; weak, medium, subangular blocky structure; friable when moist, slightly sticky when wet; gradual, smooth boundary; layer is 28 to 40 inches thick.
- B₃ 40 to 46 inches, yellowish-red (5YR 4/8) sandy clay loam; weak, medium, subangular blocky structure; friable when moist, less sticky than B₂ horizon when wet; gradual, smooth boundary; layer is 6 to 8 inches thick.
- C 46 inches +, red (2.5YR 4/8) sandy clay loam and sandy loam that is mottled with a more intense red and strong brown.

The surface layer is 6 to 12 inches thick. In a few places its texture is sandy loam. The color range is from dark grayish brown to brown. The subsoil is strong-brown to yellowish-red heavy sandy clay loam, clay loam, or sandy clay. The slope range is from 0 to 10 percent.

Profile of Gilead loamy sand 6 miles northeast of Manville on State Highway No. 36:

- A_p 0 to 6 inches, grayish-brown (10YR 5/2) loamy sand; weak, fine, granular structure; very friable; abrupt, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 6 to 13 inches, pale-brown (10YR 6/3) loamy sand; weak, fine, granular structure; very friable; small pockets or spots of highly bleached sand indicating some segregation of iron; some penetration of organic matter in old root channels; clear, smooth boundary; layer is 7 to 10 inches thick.
- B₁ 13 to 22 inches, brownish-yellow (10YR 6/6) sandy clay loam; weak, medium, angular blocky structure; friable; thin, patchy clay films; a few medium to coarse, bleached sand grains; a few fine roots; clear, smooth boundary; layer is 8 to 10 inches thick.
- B₂ 22 to 29 inches, brownish-yellow (10YR 6/6) heavy sandy clay loam; common, medium, distinct mottles of reddish yellow (7.5YR 6/6), and some of red and yellowish brown; moderate, medium, angular blocky structure; compact; aggregates are brittle and break under slight to medium pressure; the redder spots are most brittle and may be the beginning of iron concretions; thin, almost continuous clay films; clear, smooth boundary; layer is 6 to 10 inches thick.
- C 29 to 34 inches, mottled brownish-yellow, strong-brown, red, and yellow sandy clay loam; massive; compact in place; brittle fracture; texture is variable (sandy loam to clay loam); soil material is more compact with depth and contains some mica flakes.

The A_p horizon is gray to grayish brown. The entire A horizon is 12 to 18 inches thick. In places the brownish-

yellow, friable B₁ horizon is mottled with reddish yellow, red, and yellowish brown. In other places this horizon is not mottled. The lower part of the B₂ horizon is compact and brittle, and in places the entire horizon is compact. The slope range is from 0 to 15 percent. On the steeper slopes, red and reddish-yellow colors predominate. The number of coarse quartz grains and small fragments of ferruginous sandstone on the surface and throughout the profile ranges from none to many, and the amount of fine gravel, from none to much. Ordinarily, there are mica flakes in the lower part of the profile.

Profile of Goldsboro loamy sand in a cultivated field 2½ miles northwest of Lynchburg on State Highway No. 44:

- A₂ 0 to 8 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; friable when moist; many fine roots and pores; clear, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 8 to 14 inches, yellowish-brown (10YR 5/4) loamy sand; weak, fine, granular structure; friable when moist; gradual, smooth boundary; layer is 6 to 8 inches thick.
- B₂₁ 14 to 21 inches, yellowish-brown (10YR 5/6) sandy clay loam; few, fine, distinct mottles of strong brown (7.5YR 5/6); weak, coarse, subangular blocky structure; friable when moist; a few roots and pores; gradual, smooth boundary; layer is 6 to 8 inches thick.
- B₂₂ 21 to 34 inches, yellowish-brown (10YR 5/8) sandy clay loam; few, coarse, distinct mottles of strong brown (7.5YR 5/8) and few, coarse, faint mottles of light brownish gray (10YR 6/2); weak, coarse, subangular blocky structure; friable when moist; gradual, smooth boundary; layer is 12 to 14 inches thick.
- C 34 inches +, yellow, brown, and gray sandy clay loams and sandy loams; a few soft concretions that have red centers.

Goldsboro soils are moderately well drained. Their A horizon is 12 to 18 inches thick. In a few areas it is sandy loam instead of loamy sand. The texture of the B horizon ranges from sandy loam to heavy sandy clay loam. Ordinarily, the uppermost 6 inches of the B horizon is a uniform yellowish brown in color. Mottling may begin at any depth from 6 to 20 inches.

Profile of Izagora sandy loam on the east side of paved road 500 yards north of Merchants Mill Creek:

- A_p 0 to 6 inches, dark-gray (10YR 4/1) sandy loam; weak, fine, granular structure; friable when moist; a few fine roots and many fine pores; abrupt, smooth boundary; layer is 5 to 10 inches thick.
- A₂ 6 to 12 inches, light brownish-gray (10YR 6/2) sandy loam; weak, medium, granular structure; friable when moist; many fine pores and a few fine roots; clear, smooth boundary; layer is 5 to 10 inches thick.
- B₁ 12 to 19 inches, light olive-brown (2.5YR 5/4) sandy clay loam; weak, medium, subangular blocky structure; friable when moist; many fine pores; clear, smooth boundary; layer is 5 to 9 inches thick.
- B₂ 19 to 31 inches, light olive-brown (2.5YR 5/4) sandy clay loam; few, fine, distinct mottles of yellowish red (5YR 5/6); weak, medium, subangular blocky structure; slightly firm; a few fine pores; gradual, smooth boundary; layer is 10 to 14 inches thick.
- C 31 to 57 inches +, gray (10YR 6/1) sandy clay loam; many, fine, prominent mottles of red (2.5YR 4/6) and many, medium, distinct mottles of yellowish brown (10YR 5/4); massive; friable when moist.

The range in drainage of Izagora soils is from moderately good to somewhat poor. In a few profiles the A horizon is fine sandy loam. Mottling is more pronounced in the B horizon of the soils that are somewhat poorly drained.

Profile of Kalmia loamy sand 10 miles northeast of Bishopville and 2 miles east of Clyburn's store, on the Lynches River terrace:

- A_p 0 to 9 inches, grayish-brown (10YR 5/2) loamy sand; weak, fine, granular structure; very friable; a few coarse quartz grains; clear, smooth boundary; layer is 6 to 9 inches thick.
- A₂ 9 to 15 inches, light-gray (10YR 7/2) loamy sand; weak, fine, granular structure; very friable; a few coarse quartz grains; smooth boundary; layer is 9 to 12 inches thick.
- B₂ 15 to 36 inches, yellowish-brown (10YR 5/6) sandy clay loam; weak, medium, subangular blocky structure; friable; a few soft, red concretions; a few coarse quartz grains; gradual, smooth boundary; layer is 20 to 30 inches thick.
- C 36 inches +, yellowish-brown (10YR 5/6) sandy clay loam; few, fine, distinct mottles of dark brown (7.5YR 4/4) and few, medium, faint mottles of pale brown (10YR 6/3); structureless; a few soft, red concretions; a few lenses and pockets of sand.

The color of the A_p horizon ranges from gray to grayish brown. The texture of the A horizon generally is loamy sand, but in a few profiles it is loamy fine sand. The A horizon is 12 to 18 inches thick. The texture of the yellowish-brown B horizon is sandy clay loam, but in a few profiles the B₂ horizon is sandy clay. The slope range is from 0 to 6 percent, but most slopes are from 0 to 2 percent. The number of concretions ranges from none to many.

Profile of Magnolia loamy sand in a site 150 yards northwest of the crossroads at Woodrow:

- A_p 0 to 8 inches, reddish-brown (5YR 4/3) loamy sand; weak, fine, crumb structure; friable when moist; many coarse quartz grains, many concretions, and much fine quartz gravel on the surface and in this horizon; abrupt, smooth boundary; layer is 6 to 10 inches thick.
- A₂ 8 to 12 inches, reddish-brown (2.5YR 4/4) loamy sand; weak, medium and fine, crumb structure; friable when moist; a few coarse quartz grains and fine concretions; abrupt, smooth boundary; layer is 0 to 4 inches thick.
- B₂ 12 to 42 inches, dark-red (10R 3/6) sandy clay; weak, medium, subangular blocky structure; friable when moist, firm when dry; a few coarse quartz grains; grades to sandy clay loam in lower part of the horizon; gradual, smooth boundary; layer is 24 to 36 inches thick.
- B₃ 42 to 47 inches, dark-red (10R 3/6) sandy clay loam; weak, fine, subangular blocky structure; friable when moist, firm when dry; a few coarse quartz grains; gradual, smooth boundary; layer is 4 to 8 inches thick.
- C 47 to 74 inches +, dark-red (10R 3/6) sandy loam and sandy clay; few, coarse, prominent mottles of yellowish red (5YR 5/6); massive; firm when dry; coarse quartz grains are common.

The A horizon is 6 to 12 inches thick. In some places there is either no A₂ horizon or it has been mixed with the A₁ horizon by plowing. The color ranges from grayish brown to reddish brown. The number of concretions and coarse quartz grains ranges from none to many, and the amount of fine gravel, from none to much.

Profile of Marlboro loamy sand in a cultivated field 3 miles southwest of Bishopville, near U.S. Highway No. 15:

- A_p 0 to 8 inches, very dark grayish-brown (10YR 3/2) loamy sand; weak, fine, crumb structure; friable when moist; many fine roots and pores; abrupt, smooth boundary; layer is 8 to 12 inches thick.

- B₂ 8 to 36 inches, dark yellowish-brown (10YR 4/4) sandy clay; medium, subangular blocky structure; friable when moist; gradual, smooth boundary; layer is 26 to 30 inches thick.
- C 36 inches +, yellowish-brown (10YR 5/8) and strong-brown (7.5YR 5/8) sandy clay loam and sandy clay; structureless; friable when moist; scattered lenses of white kaolin; a few soft concretions.

The A horizon is grayish brown to very dark grayish brown and 6 to 12 inches thick. In some profiles there is an A₂ horizon that is 2 or 3 inches thick. In some profiles there is a thin B₁ horizon or a B₃ horizon. The color of the B horizon ranges from yellowish brown to strong brown. The slope range is from 0 to 10 percent.

Profile of Norfolk loamy sand in a cultivated field 3 miles south of Bishopville on State Highway No. 341:

- A_p 0 to 6 inches, grayish-brown (10YR 5/2) loamy sand; weak, fine, crumb structure; very friable; many fine roots and pores; abrupt, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 6 to 12 inches, light yellowish-brown (10YR 6/4) loamy sand; weak, fine, crumb structure; friable when moist; many fine roots and pores; clear, smooth boundary; layer is 6 to 10 inches thick.
- B₁ 12 to 16 inches, yellowish-brown (10YR 5/6) light sandy clay loam; weak, fine crumb structure; friable when moist; many fine roots and pores; clear, smooth boundary; layer is 2 to 6 inches thick.
- B₂ 16 to 23 inches, yellowish-brown (10YR 5/8) sandy clay loam; weak, medium, subangular blocky structure; friable when moist; gradual, smooth boundary; layer is 7 to 10 inches thick.
- B₃ 23 to 42 inches, yellowish-brown (10YR 5/8) light sandy clay loam; weak, medium, subangular blocky structure; friable when moist; gradual, wavy boundary; layer is 18 to 23 inches thick.
- C 42 inches +, yellowish-brown (10YR 5/8) sandy clay loam; pockets of sand or loamy sand; many soft concretions.

The texture of the dark-gray to grayish-brown A horizon is loamy sand or loamy fine sand. Thickness ranges from 12 to 18 inches in the normal loamy sand and from 18 to 30 inches in Norfolk loamy sand, thick surface. Ordinarily, the brownish-yellow to yellowish-brown B horizon is sandy clay loam, but in some places the upper part of this horizon is sandy loam. The slope range is from 0 to 10 percent.

Profile of Orangeburg loamy sand 250 yards northeast of Gillards Crossroads:

- A_p 0 to 8 inches, dark-brown (10YR 4/3) loamy sand; structureless; a little fine quartz gravel; clear, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 8 to 15 inches, yellowish-brown (10YR 5/4) loamy sand; weak, fine, crumb structure; friable; a few small concretions; also a little fine quartz gravel; clear, wavy boundary; layer is 6 to 12 inches thick.
- B₁ 15 to 18 inches, red (2.5YR 4/8) light sandy clay loam; weak, medium, subangular blocky structure; friable; clear, smooth boundary; layer is 3 to 5 inches thick.
- B₂ 18 to 43 inches, dark-red (10R 3/6) sandy clay loam; weak, medium, subangular blocky structure; friable when moist, sticky when wet; a little fine quartz gravel; coarse quartz grains in lower 12 inches; gradual, wavy boundary; layer is 20 to 40 inches thick.
- B₃ 43 to 70 inches, dark-red (10R 3/6) sandy clay loam; few, fine, prominent, yellowish-red (5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; coarse quartz grains are more numerous and fine gravel more abundant than in the B₂ horizon; diffuse, wavy boundary; layer is 10 to 30 inches thick.

- C 70 to 100 inches +, red (10R 4/6) light sandy clay loam; common, fine, prominent, yellowish-red (5YR 5/8) mottles, increasing in size and abundance with depth; coarse quartz grains are more numerous, and fine gravel is more abundant than in the B₃ horizon, and both increase in amount with depth.

The color of the A_p horizon ranges from grayish brown to dark brown. The number of concretions and coarse quartz grains in the profile ranges from none to many, and the amount of fine gravel, from none to much. The slope range is from 0 to 15 percent.

Profile of Ruston loamy sand in a cultivated field 1½ miles southwest of Ashland:

- A_p 0 to 9 inches, dark grayish-brown (10YR 4/2) loamy sand; weak, fine, granular structure; friable when moist; slightly acid; many fine roots and pores; abrupt, smooth boundary; layer is 6 to 9 inches thick.
- A₂ 9 to 16 inches, light yellowish-brown (10YR 6/4) loamy sand; weak, fine, granular structure; many fine roots and pores; friable when moist; clear, smooth boundary; layer is 6 to 9 inches thick.
- B₁ 16 to 20 inches, strong-brown (7.5YR 5/6) light sandy clay loam; weak, fine, subangular blocky structure; friable when moist; many fine pores; clear, smooth boundary; layer is 4 to 6 inches thick.
- B₂ 20 to 35 inches, yellowish-red (5YR 5/8) sandy clay loam; weak medium, subangular blocky structure; friable when moist, slightly sticky when wet; patchy clay films; gradual, wavy boundary; layer is 14 to 24 inches thick.
- C 35 inches +, red (10R 4/8) and strong-brown (7.5YR 5/8) sandy clay loam; numerous sand pockets.

The color of the A_p horizon ranges from dark grayish brown to light yellowish brown. In a few places its texture is sandy loam. The A horizon is 12 to 18 inches thick in the normal soil and 18 to 30 inches thick in the thick surface phases. The color of the B horizon is strong brown in the upper part and grades to yellowish red in the lower part. In places the upper part of the B horizon is sandy loam. The number of small concretions on the surface and throughout the profile ranges from none to many. The slope range is from 0 to 10 percent.

Profile of Vaucuse loamy sand in woods behind Ashland Methodist Church, one-fourth of a mile west of Ashland:

- A₁ 0 to 2 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; friable; many bleached quartz grains and a little fine quartz gravel; many fine and medium roots; clear, smooth boundary.
- A₂₁ 2 to 7 inches, brown (10YR 4/3) loamy sand; weak, fine, granular structure; friable; much fine and medium quartz gravel; many fine and medium roots; clear, smooth boundary.
- A₂₂ 7 to 11 inches, light yellowish-brown (10YR 6/4) loamy sand; weak, fine, granular structure; slightly compact and brittle; much fine and medium quartz gravel; many fine and medium roots; clear, smooth boundary.
- B₂ 11 to 20 inches, red (2.5YR 5/8) clay loam; weak, medium, subangular blocky structure; compact and brittle; a few fine flakes of white kaolin and a few fine flakes of mica; a few coarse quartz grains and a little fine quartz gravel; a few medium root channels; gradual, smooth boundary.
- C 20 to 34 inches +, red (2.5YR 4/8) sandy clay loam; massive; very firm and compact in place; brittle fracture; crushes to loose mass; many fine, white particles of kaolin and a few fine mica flakes; size and number of kaolin particles increase with depth; a few balls of kaolin in the lower part.

The A horizon is 6 to 18 inches thick in the normal soil and 18 to 30 inches thick in the thick surface phases. Its

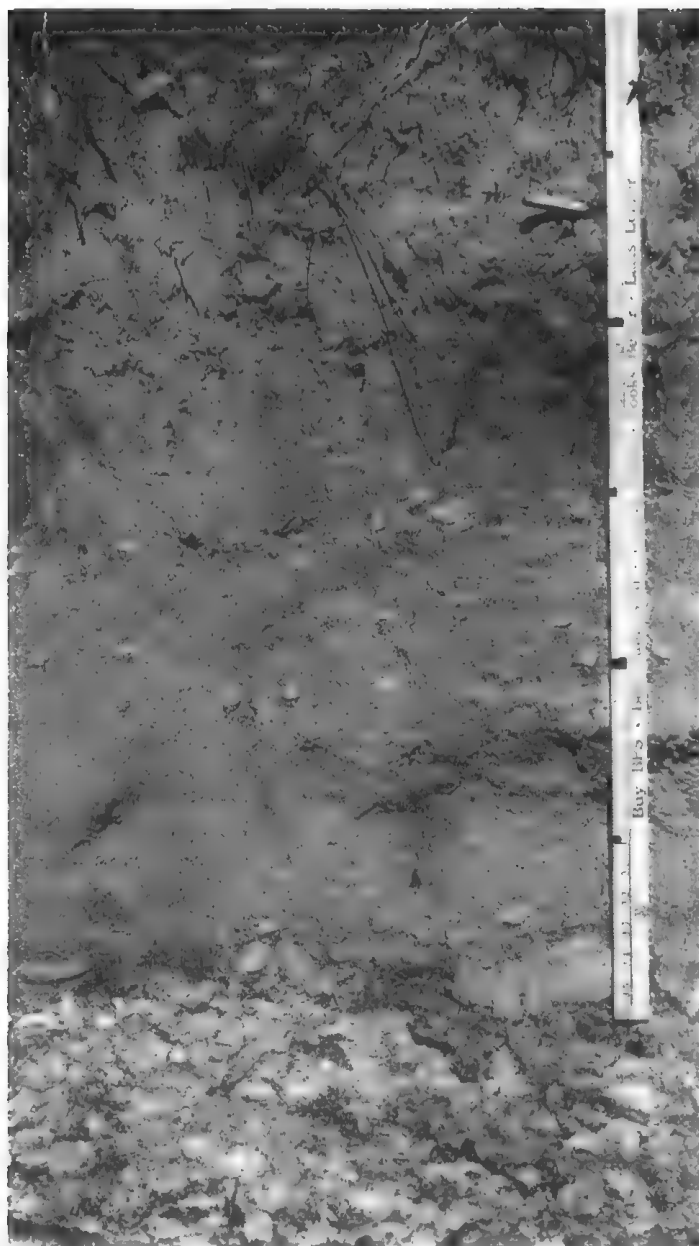


Figure 12.—Profile of Vaucuse loamy sand. The compact B horizon is at a depth of 11 inches; the slightly cemented, sandy C horizon is at a depth of 20 inches.

color ranges from very dark gray in wooded areas to light yellowish brown in cultivated fields. In a few places its texture is sandy loam. The compact and brittle clay loam B horizon (fig. 12) is 6 to 18 inches thick. In a few places there is no B horizon, and in these places the A horizon rests on the substratum. The amount of gravel and the number and size of ferruginous sandstone fragments, coarse quartz grains, and mica flakes vary throughout the profile. All or none of these may be present in any given place. Quartz gravel and sandstone fragments are scattered over the surface in many places.

Of the Red-Yellow Podzolic soils, soils in three series—Cahaba, Kalmia, and Izagora—formed in old general

alluvium on stream terraces. These soils generally are underlain by stratified sandy deposits and are younger than the soils formed in marine deposits of unconsolidated sands and clays.

Cahaba, Faceville, Magnolia, Orangeburg, Ruston, and Vacluse soils are redder than the yellow to yellowish-brown Gilead, Goldsboro, Izagora, Kalmia, Marlboro, and Norfolk soils. Faceville, Magnolia, and Marlboro soils are finer textured than the rest of these Red-Yellow Podzolic soils, and they have a thinner surface layer.

Gilead and Vacluse soils are mostly in the Sand Hills section of the county and are not so well developed as other soils of the uplands. These soils also have a compact and brittle or weakly cemented B horizon and a slightly compact C horizon. Compaction is not so pronounced in Gilead soils as in Vacluse soils. The B horizon of the other Red-Yellow Podzolic soils is friable, although in Faceville soils it is slightly sticky when wet.

All these soils are well drained except Goldsboro soils, which are only moderately well drained, and Izagora soils, which are moderately well drained to somewhat poorly drained. Except for drainage, Goldsboro soils are similar to Norfolk soils, and Izagora soils are similar to Kalmia soils.

Dunbar and Lynchburg soils have characteristics of Red-Yellow Podzolic soils, but they resemble Low-Humic Gley soils in their gray color and in mottling. They are classified as Red-Yellow Podzolic soils grading to Low-Humic Gley soils. Soils in both series are somewhat poorly drained, and their gray color and mottling are related to wetness. Except for poorer drainage, Dunbar soils are similar to Marlboro soils, and Lynchburg soils are similar to Norfolk soils.

The following descriptions are of representative profiles of Dunbar and Lynchburg soils in Lee County.

Profile of Dunbar sandy loam in a cultivated field one-half mile west of Wisacky:

- A_p 0 to 7 inches, dark-gray (10YR 4/1) sandy loam; weak, fine, granular structure; friable when moist; numerous fine roots and pores; abrupt, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 7 to 12 inches, brown (10YR 5/3) sandy loam; weak, fine, granular structure; friable; many fine roots and pores; clear, smooth boundary; layer is 4 to 6 inches thick.
- B₂ 12 to 25 inches, light brownish-gray (10YR 6/2) sandy clay loam; many, medium, faint mottles of yellowish brown (10YR 5/6); weak, coarse, subangular blocky structure; friable when moist; a few large pores and a few coarse quartz grains; gradual, wavy boundary; layer is 12 to 15 inches thick.
- B₃ 25 to 34 inches, gray (10YR 6/1) sandy clay loam; many, faint, coarse mottles of yellowish brown (10YR 5/6) and few, medium, distinct mottles of strong brown (7.5YR 5/8); weak, coarse, subangular blocky structure; friable when moist; gradual, wavy boundary; layer is 8 to 12 inches thick.
- C₁ 34 inches +, gray (10YR 6/1) sandy clay loam; many, faint, coarse mottles of yellowish brown (10YR 5/6); few, medium, distinct mottles of strong brown (7.5YR 5/6); and few, medium, prominent mottles of red (2.5YR 5/8); massive; scattered pockets of loamy sand; many coarse quartz grains; a few incipient concretions.

In many places the texture of the subsoil is finer than in this profile. It generally is sandy clay, especially if the soil is near Marlboro, Faceville, or Magnolia soils.

Profile of Lynchburg sandy loam in a cultivated field 1 mile northwest of Lynchburg:

- A_p 0 to 8 inches, very dark gray (10YR 3/1) sandy loam; weak, fine, granular structure; friable when moist; many fine roots and pores; a few coarse quartz grains; clear, smooth boundary; layer is 6 to 8 inches thick.
- A₂ 8 to 13 inches, grayish-brown (10YR 5/2) sandy loam; common, fine, faint mottles of brownish yellow (10YR 6/6); weak, fine, granular structure; friable when moist; many fine roots and pores; a few coarse quartz grains; clear, smooth boundary; layer is 4 to 6 inches thick.
- B₂ 13 to 36 inches, gray (10YR 5/1) light sandy clay loam; many medium, distinct mottles of strong brown (7.5YR 5/8); weak, coarse, subangular blocky structure; friable when moist, slightly sticky when wet; pockets of gray sandy loam throughout this horizon; gradual, wavy boundary; layer is 12 to 15 inches thick.
- C 36 inches +, light-gray (10YR 6/1), yellowish-brown (10YR 5/6), and brown (7.5YR 4/4) sandy clay loams and sandy loams.

The A_p horizon ranges from very dark gray to dark gray depending on the amount of organic matter present. The texture is sandy loam or fine sandy loam. Mottling occurs throughout the profile and is pronounced in the B horizon.

The B horizon of Lynchburg soils has a slightly coarser texture than that of Dunbar soils.

Podzols

Podzols are zonal soils in which the organic acids formed in the mat of decomposing plant materials on the surface of the soil. These acids leached iron and aluminum oxides from the uppermost few inches of the mineral soil. This leaching process results in a soil profile that has a gray eluvial layer immediately beneath the organic mat and a reddish or brownish illuvial horizon below the eluvial horizon. During the process of podzolization, most of the basic cations have been replaced by hydrogen ions, and the soils, therefore, are strongly acid. Podzols have formed under coniferous forest, under mixed coniferous and deciduous forest, or under heath vegetation in a cool-temperate, moist climate. Soils in the Lakewood series are the only members of this great soil group in Lee County.

Profile of Lakewood sand in a site 200 yards northeast of the community building in Lee State Park:

- A₁ 0 to 2 inches, very dark gray (10YR N/3) sand; single grain; loose; moderately high content of organic matter; numerous roots; dry exposed areas have a white appearance; wet areas have a salt-and-pepper appearance; pH 5.4; clear, smooth boundary.
- A₂ 2 to 20 inches, light-gray (10YR 7/1) sand; single grain; loose; few roots; some black organic matter from the A₁ horizon has penetrated this horizon; sand grains are medium sized and well rounded; contains only scattered dark mineral material; pH 5.7; abrupt, wavy boundary.
- B_{h1} 20 to 21 inches, strong-brown to reddish-brown (7.5YR 5/8 to 5YR 4/4) sand; massive; slightly compact but breaks to a loose mass; pH 5.1; abrupt, wavy boundary.
- C₁ 21 to 40 inches, brownish-yellow (10YR 6/6) sand; single grain; loose; some penetration of organic matter; pH 5.1.
- B_{h1b} 40 to 41 inches, slightly acid; similar to the B_{h1} horizon.
- C₂ 41 inches +, brownish-yellow to yellow, loose sand.

The thickness of the A₂ horizon varies considerably. In a few profiles, there is no B_h horizon or it is at great depth. From a distance, the surface of the soil appears to be white because of the numerous bleached sand grains. When wet, the surface has the salt-and-pepper appearance typical of Podzol soils.

Low-Humic Gley soils

This great soil group consists of imperfectly drained to poorly drained soils that have a very thin surface horizon in which the content of organic matter is moderately high. This horizon lies over a mottled gray and brown, gleylike mineral horizon in which there is a low degree of textural differentiation. The soil-forming process is gleization, a process that involves saturation of the soil with water for long periods of time in the presence of organic matter.

Low-Humic Gley soils in Lee County are the poorly drained soils in the Coxville, Grady, Myatt, Plummer, Rains, and Wehadkee series. These soils have formed in stream alluvium or acid marine sediments under a forest cover of loblolly pine, pond pine, sweetgum, blackgum, maple, beech, various kinds of oaks, and other hardwoods. They were influenced more by nearly level relief, a high water table, and impeded drainage than by climate and vegetation. The surface layer is gray to grayish brown. The color of the subsoil ranges from mottled gray, brown, and yellow to dominantly gray, and the texture, from loamy sand to sandy clay or clay.

Following are descriptions of the profiles of the Low-Humic Gley soils in this county.

Profile of Coxville loam in a nearly level cottonfield that has been tile drained, 2 miles northwest of St. Charles on the Manville road (State Highway No. 28):

- A_p 0 to 6 inches, very dark gray (10YR 3/1) to dark-gray (10YR 4/1) loam; weak, fine, granular structure; friable; pH 5.5; abrupt, smooth boundary.
- A₂ 6 to 9 inches, gray (10YR 6/1) loam; some dark-gray pockets and streaks of material from A_p horizon in root channels; weak, fine, granular structure; friable; numerous fine pores arranged in a vesicular pattern; pH 5.0; clear, smooth boundary.
- B_{1g} 9 to 25 inches, gray (10YR 6/1 to 5/1) sandy clay loam; few, medium, distinct mottles of yellowish brown (10YR 5/4); weak, medium, subangular blocky structure; friable when moist, plastic and slightly sticky when wet; thin, patchy clay films; some coarse sand grains; mottling increases with depth; pH 4.5; gradual, smooth boundary.
- B_{2g} 25 to 39 inches, gray (10YR 5/1) clay loam; many, medium to coarse, prominent mottles of yellowish brown and strong brown; mottled areas tend to have brittle fracture; weak, coarse, subangular blocky structure; distinct, patchy clay films on ped surfaces; firm when moist, plastic and slightly sticky when wet; pH 4.5; clear, smooth boundary.
- C 39 to 45 inches, gray (10YR 5/1) clay loam; common, medium to coarse, prominent mottles of strong brown and yellowish red; weak, coarse, blocky structure to massive; firm when moist, plastic and slightly sticky when wet; mottled areas are slightly brittle; a few patchy clay films; contains a larger proportion of coarse sand particles than the B_{2g} horizon.

The A horizon is loam or sandy loam and very dark gray to gray.

Profile of Grady loam on a farm 2 miles south of Ashland:

- A₁ 0 to 10 inches, very dark gray (10YR 3/1) loam; weak, fine, granular structure; friable; numerous fine and medium roots; some dark reddish-brown staining from decomposed organic material; pH 6.0; clear, smooth boundary.
- A₃ 10 to 14 inches, dark-gray (10YR 4/1), grading to gray, (10YR 5/1) heavy loam; weak, fine, subangular blocky structure breaking to weak, crumb structure; fine roots are common; pH 5.7; clear, smooth boundary.
- B_{2g} 14 to 25 inches, gray (10YR 6/1) heavy sandy clay loam; streaks and pockets of dark grayish brown (10YR 4/2); weak, coarse, blocky structure; some soil material from A horizon in root channels and cracks; friable when moist, plastic and sticky when wet; thin, patchy clay films; color is more gray with depth; pH 5.5; gradual, smooth boundary.
- B_{3g} 25 to 28 inches, light-gray to gray (5Y 7/1 to 6/1) sandy loam; a few fine quartz pebbles; some dark streaks of material from A horizon in old root channels; massive; slightly brittle when moist; appears to be high in kaolinite clay; thin, patchy clay films, especially along cracks; pH 5.5; gradual, smooth boundary.
- C_g 28 to 72 inches, light-gray (5Y 7/1) loamy sand; pockets and streaks of very dark gray and reddish-brown soil material; sand is somewhat angular; appears to contain kaolinite clay in the form of pockets or streaks of finer textured material; pH 5.5.
- D 72 inches +, light-gray (5Y 7/1) clay loam; a few red mottles; massive; appears to be high in kaolinite clay; pH 5.5.

There is more variation in the thickness, color, and organic-matter content of the A horizon in Grady soils than in any of the other Low-Humic Gley soils in the county. The A horizon ranges from gray to black in color, from sandy loam to loam in texture, and from 6 to 20 inches in thickness. The texture range in the B horizon is from sandy clay loam to clay. The color is gray and there is considerable variation in the number of yellowish-brown, brown, or red mottles. In some places the B₃ horizon contains many large mottles of yellowish brown (10YR 5/6). This yellowish-brown material generally is friable sandy clay loam. In some places there is little or no mottling in the B horizon.

In Lee County, Grady soils occur exclusively in oval-shaped depressions that are known locally as Carolina bays. The long axis of these bays is in a northwest to southeast direction. One of the many theories on the origin of these bays is that they were formed by the dissolution of limestone in the underground water. Tests of the hydrogen-ion concentration of the soil material in these bays show little indication of any remaining limestone. Although Grady soils occur only in these oval-shaped depressions, other soils also occur in them:

Profile of Myatt sandy loam on a farm southeast of Lynchburg on State Highway No. 99:

- A₁ 0 to 9 inches, dark olive-gray (5Y 3/2) sandy loam; weak, fine, granular structure; very friable; many fine roots and pores; clear, smooth boundary; layer is 6 to 12 inches thick.
- B_{1g} 9 to 18 inches, gray (5Y 6/1) sandy loam; few, fine, distinct mottles of dark yellowish brown (10YR 4/4); weak, fine, granular structure; friable; many fine roots and pores; clear, smooth boundary; layer is 8 to 12 inches thick.

B₂ 18 to 32 inches, gray (5Y 5/1) sandy clay loam; few, fine, distinct mottles of dark yellowish brown (10YR 4/4); weak, medium, subangular blocky structure; friable; gradual, wavy boundary; layer is 10 to 20 inches thick.

C_g 32 inches +, light-gray (5Y 7/1) sand; structureless.

The gray to black A horizon generally is sandy loam, but in some places it is loamy sand. In some places there is no mottling in the sandy loam or sandy clay loam B horizon.

Profile of Plummer loamy sand 8 miles west of Bishopville on State Highway No. 32:

A₁ 0 to 2 inches, dark-gray (10YR 4/1) loamy sand; weak, fine, granular structure; very friable; many fine roots; abrupt, smooth boundary.

A₂ 2 to 7 inches, gray (10YR 5/1) loamy sand; weak, fine, granular structure; very friable; gradual, smooth boundary.

C_g 7 to 40 inches, light-gray (10YR 6/1) sand; structureless.

In places the subsurface layer contains lenses or pockets of finer textured material. The A horizon is loamy sand or sand, and its color ranges from gray to black, depending on the content of organic matter. The terrace phase of Plummer loamy sand, which formed in stream alluvium, has a profile almost identical to the profile of the upland phase described. Because of the coarse texture of the parent material, Plummer soils show little profile development.

Profile of Rains loamy sand 9 miles northwest of Bishopville near State Highway No. 148:

A₀ 1 inch to 0, litter of pine needles and hardwood leaves.

A₁ 0 to 12 inches, very dark gray (10YR 3/1) loamy sand; weak, fine, granular structure; fairly high content of organic matter; numerous bleached, white quartz grains on the surface; many roots and pores; abrupt, wavy boundary; layer is 10 to 14 inches thick.

B₁ 12 to 21 inches, gray (10YR 6/1) sandy loam; many, medium and fine, distinct mottles of yellowish brown (10YR 5/4) and many, medium and fine, prominent mottles of strong brown (7.5YR 5/6); weak, fine, subangular blocky structure; friable; many root holes and pores; clear, wavy boundary; layer is 8 to 12 inches thick.

B₂ 21 to 28 inches, gray (N 5/0) sandy clay loam; weak, coarse, subangular blocky structure; few, faint, light-gray (10YR 7/2) mottles; a few root holes and pores; clear, smooth boundary; layer is 7 to 12 inches thick.

C_g 28 to 46 inches +, light brownish-gray (2.5Y 6/2) sandy loam and sandy clay loam; structureless; root holes are lined with strong-brown material; friable.

The color of the A horizon ranges from very dark gray to gray, depending on the content of organic matter. The B horizon is sandy loam or sandy clay loam. The number of mottles in the B horizon ranges from very few to many.

Profile of Wehadkee silt loam in a site near the "loop road" in Lee State Park:

A₀ 1 inch to 0, partially decomposed forest litter.

A₁ 0 to 2 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, fine, granular structure; friable; abrupt, smooth boundary.

C₁ 2 to 14 inches, dark grayish-brown (10YR 4/2) silty clay; few, medium, faint mottles of brownish yellow (10YR 5/4) and few, fine, distinct mottles of gray (10YR 6/1); massive; plastic and sticky; gradual, smooth boundary.

C₂ 14 to 32 inches, dark grayish-brown (10YR 4/2) silty clay; brownish-yellow and gray mottles increase in size and number; massive; plastic and sticky; free water prevented deeper investigation.

Wehadkee soils are young and show little profile development. They occur at the lowest levels along streams. They are covered by water at frequent intervals and receive thin new deposits of soil material.

Of these Low-Humic Gley soils, Myatt soils formed in old general alluvium on stream terraces, and Wehadkee soils, in recent alluvial deposits on first bottoms. The other soils in this group formed in beds of unconsolidated sands and clays of marine Pleistocene terraces. Of these soils, Plummer soils have the coarsest texture, and Myatt and Rains soils are more coarse textured than either Coxville or Grady soils. Coxville and Grady soils are similar in texture and in structure and consistence, but Coxville soils generally show more profile development. Grady soils do not have the red mottling characteristic of Coxville soils.

Humic Gley soils

This intrazonal great soil group consists of poorly drained to very poorly drained hydromorphic soils. These soils have moderately thick, dark-colored, organic-mineral horizons, underlain by mineral gley horizons. The soil-forming process is gleization.

In Lee County, soils in the Okenee, Portsmouth, and Rutlege series are members of this great soil group. These soils formed in acid sediments in which the water table fluctuated but generally was fairly high and runoff was very slow. Okenee soils formed in old general alluvium on stream terraces, and Portsmouth and Rutlege soils, in marine Pleistocene terrace deposits. They formed under a forest cover that consisted chiefly of loblolly pine, pond pine, water-tolerant oaks, sweetgum, blackgum, red maple, and yellow-poplar.

These soils have a dark-gray, very dark gray, or black surface layer and a gray subsoil that ranges from loamy sand to sandy clay in texture. Rutlege soils are coarser textured than either Portsmouth soils or Okenee soils. In forested areas the content of organic matter ranges from 5 to 15 percent. Descriptions of representative profiles of these soils follow.

Profile of Okenee loam in a site on the south side of U.S. Highway No. 401, 3 miles east of Elliott:

A₁₁ 0 to 13 inches, black (N 2/0) loam; weak, medium, granular structure; friable; high content of organic matter; many fine roots and pores; clear, smooth boundary.

A₁₂ 13 to 20 inches, very dark gray (N 3/0) loam; weak, fine, granular structure; friable; many fine roots and pores; a few coarse quartz grains; clear, wavy boundary.

B₂ 20 to 30 inches, gray (10YR 5/1) sandy clay loam; weak, medium, subangular blocky structure to massive; few, fine, distinct mottles of yellowish brown (10YR 4/4).

C_g 30 inches +, light-gray (10YR 7/1) sandy loams and sands; water table at 30 inches.

The A horizon ranges from 18 to 24 inches in thickness and from sandy loam to loam in texture. The B horizon ranges from sandy clay loam to light sandy clay in texture and from 10 to 20 inches in thickness. The substratum is variable in texture, but it generally contains lenses of sands and clays.

Profile of Portsmouth loam on the west side of State Highway No. 58, 2 miles south of Lynchburg:

- A₁ 1 inch to 0, forest litter.
- A₁₁ 0 to 7 inches, black (2.5Y 2/0) loam; weak, fine, granular structure; very friable; high content of organic matter; strongly acid; clear, smooth boundary.
- A₁₂ 7 to 14 inches, black (5Y 2/1) loam; weak, fine, granular structure; very friable; strongly acid; clear, smooth boundary.
- B_{2s} 14 to 31 inches, gray (5Y 6/1) sandy clay; weak, fine subangular blocky structure; friable; well-developed clay films; a few soft, fine concretions; strongly acid; gradual, smooth boundary.
- C_s 31 inches +, light-gray (5Y 7/1) sandy clay loam; massive.

The dark-gray to black A horizon is 12 to 18 inches thick. The texture is loam or sandy loam. In places the clay loam or sandy clay B horizon is mottled with brown and red. The number of soft concretions ranges from none to many.

Profile of Rutlege loamy sand half a mile south of the entrance to Lee State Park, on State Highway No. 22:

- A₁₁ 0 to 12 inches, black (10YR 2/1) loamy sand; high content of organic matter; weak, fine, crumb structure to structureless; many clear quartz grains on surface; a few fine roots and pores; strongly acid; abrupt, smooth boundary; layer is 10 to 12 inches thick.
- A₁₂ 12 to 16 inches, dark-gray (10YR 4/1) loamy sand; structureless; very friable; gradual, wavy boundary; layer is 4 to 6 inches thick.
- C_s 16 to 36 inches +, gray (10YR 5/1) loamy sand; a few thin lenses of sandy clay loam; structureless.

The very dark gray to black A horizon is 10 to 20 inches thick. The texture range is from loamy sand to loam. The subsoil ordinarily is loamy sand, but in a few profiles it is sandy loam.

Planosols

Planosols are intrazonal soils that have one or more horizons abruptly separated from, and sharply contrasting to, an adjacent horizon because of cementation, compaction, or high content of clay. These horizons are referred to as pans. Pans rich in clay are called claypans. Those rich in either silt or sand, or both, but having a relatively low content of clay, are known as fragipans. The Planosols in Lee County have claypans, which are compact, slowly permeable, and commonly hard when dry and plastic or stiff when wet. Planosols developed on nearly flat or gently sloping uplands in a humid or subhumid climate.

Soils in the Leaf and Wahee series are members of this great soil group. Both soils formed in old general alluvium on stream terraces. Leaf soils are poorly drained, and Wahee soils are moderately well drained to somewhat poorly drained.

Profile of Leaf fine sandy loam in a wooded area 500 yards north of State Highway No. 17, on the Lynches River terrace:

- A₀ 1 inch to 0, litter of partially decomposed pine needles and leaves of hardwoods.
- A₁₁ 0 to 2 inches, gray (10YR 5/1) fine sandy loam; weak, fine, granular structure; many fine roots and pores; abrupt, smooth boundary.
- A₁₂ 2 to 10 inches, gray (5Y 5/1) fine sandy loam; many, medium, prominent mottles of pale brown (10YR 6/3) to light yellowish brown (10YR 6/4); weak, fine, granular structure; many fine roots and pores; clear, smooth boundary.

- B_{2s} 10 to 28 inches, gray (10YR 6/1) fine sandy clay; many, medium mottles of red (2.5YR 4/6) and strong brown (7.5YR 5/6); weak, fine and medium, angular blocky structure; continuous clay films; slightly firm; gradual, smooth boundary.

- C 28 to 36 inches +, gray, red, and strong-brown fine clay; massive; a few pockets of fine sand.

The color of the A₁ horizon ranges from gray to black, and the texture, from fine sandy loam to sandy loam.

Profile of Wahee fine sandy loam 500 yards north of State Highway No. 17, near the Arrant home:

- A_p 0 to 6 inches, very pale brown (10YR 7/3) fine sandy loam; weak, fine, granular structure; many fine roots; plowed surface is cloddy; abrupt, smooth boundary; layer is 5 to 12 inches thick.
- B₂ 6 to 24 inches, yellowish-brown (10YR 5/6) silty clay; few, medium, prominent, red (10R 4/6) mottles; weak, coarse and medium, subangular blocky structure and weak, fine, angular blocky structure; some material from A horizon on faces of peds; gradual, smooth boundary; 16 to 30 inches thick.
- C 24 inches +, yellowish-brown, light-gray, and red, massive clay.

The fine sandy loam or silt loam A horizon ranges in color from gray to very pale brown. The range in drainage is from moderately good to somewhat poor. Consequently, the size and number of mottles in the upper part of the B horizon vary, and in some profiles there is no mottling. The texture range in the B horizon is from sandy clay to clay. The slope range is from 0 to 6 percent, but most areas of Wahee soils have a slope of 0 to 2 percent.

Regosols

Regosols are azonal soils in which few or no clearly expressed soil characteristics have developed. They formed in deep, unconsolidated, soft, mineral deposits. In Lee County, soils in the Lakeland and Eustis series are members of this great soil group.

Descriptions of representative profiles of these soils in Lee County follow.

Profile of Eustis sand on State Highway No. 36, 2 miles south of State Highway No. 34:

- A_p 0 to 7 inches, light-gray (10YR 7/2) sand; structureless; many fine roots; a few coarse quartz grains; a few fragments of ferruginous sandstone; abrupt, smooth boundary; layer is 7 to 9 inches thick.
- A₂ 7 to 14 inches, very pale brown (10YR 7/3) sand; structureless; a few coarse quartz grains; clear, smooth boundary; layer is 7 to 10 inches thick.
- C₁ 14 to 34 inches, reddish-yellow (7.5YR 6/6) sand; bands, about one-half inch thick, of strong-brown (7.5YR 5/6) sandy loam; in exposed roadbanks, these bands are firm and brittle; many coarse quartz grains; structureless; clear, smooth boundary.
- C₂ 34 to 64 inches, reddish-yellow (5YR 6/8) loamy sand; structureless; many fine mica flakes; bands not so pronounced as in the C₁ horizon; gradual, smooth boundary; layer is 24 to 30 inches thick.
- C₃ 64 inches +, yellowish-red, strong-brown, and white sands; strong-brown material is loamy sand.

The color of the A horizon ranges from light gray to very pale brown. The texture generally is sand. The color of the subsoil ranges from strong brown to yellowish red. Many profiles do not have the finer textured, darker colored bands. The number of coarse quartz grains and sandstone fragments ranges locally from none to many.

Profile of Lakeland sand 6 miles northwest of Bishopville, near Lucknow:

- A₁ 0 to 2 inches, dark-gray (2.5Y 4/0) sand; structureless; many fine and medium roots; very friable; abrupt, smooth boundary.
- A₂ 2 to 8 inches; grayish-brown (10YR 5/2) sand; structureless; loose; gradual; smooth boundary.
- C 8 to 40 inches, light yellowish-brown (10YR 6/4) sand; structureless; few, fine, faint, very pale brown (10YR 7/3) mottles in lower part.

The color of the A horizon ranges from light gray to dark gray, depending on the amount of organic matter present. The texture is sand or loamy sand. The underlying layers range from pale yellow to yellowish brown in color and from sand to sandy loam in texture. In Lakeland sand, shallow phase, the heavier textured layer occurs at a depth of 30 to 36 inches. The slope range is from 0 to 15 percent. The more steeply sloping areas are mostly in the Sand Hills. In other parts of the county, slopes generally are from 0 to 6 percent.

Lakeland sand, terrace, is a phase of the Lakeland series that formed in old general alluvium on stream terraces. Its profile is almost identical to the profile of Lakeland soils on the uplands.

Additional Facts About the County

The development and cultural facilities of Lee County are discussed in this section. Information about the water supply, agriculture, and climate is given also.

Development and Cultural Facilities

In 1902, Lee County was formed from parts of three counties: Kershaw, Darlington, and Sumter. The town of Bishopville was made the county seat. At that time there were about 500 residents in the town, but the population increased rapidly to 2,500, and Bishopville soon became a thriving trading center. A weekly newspaper was established in Bishopville in March 1902 and has been published continuously ever since. The population of Bishopville in 1960 was 3,586.

Lee County is well supplied with grade schools and churches of many denominations. A modern 50-bed hospital, with a resident surgeon, is operated by the county in Bishopville. Electricity, telephone service, and natural and propane gas service are available throughout the county. Transportation is provided by the Atlantic Coast Line Railroad and the Seaboard Air Line Railroad. U.S. Highways 15, 76, and 401 cross the county, as do a number of State highways.

Water Supplies

Water supplies are abundant in Lee County. There is a water-bearing stratum in the Pleistocene terraces, at a depth of 10 to 30 feet. It underlies all of the county south of the Sand Hills. This source supplies water for the domestic needs of the rural residents in the county as well as a large part of the water used for supplemental irrigation. As of July 1, 1960, there were 260 reservoirs that had been dug in this shallow stratum. At a depth of 100 to 400 feet is the Tuscaloosa formation (2), which is one of the most productive water-bearing formations in the South Carolina Coastal Plain. Most of the wells in the

county draw from this formation. The water is under considerable artesian pressure. In some localities, especially in the low-lying southern part of the county, wells produce free flows of 100 gallons or more per minute. In the higher parts of the county, the wells need to be pumped and will produce about 500 gallons per minute.

Other sources of water include the Lynches River, a number of smaller streams, and about 125 ponds that catch runoff.

Agriculture

Lee County has always been an agricultural county and is second in the State in percentage of land in farms—72.8 percent. Darlington County leads with 72.9 percent of its land in farms, and Dillon County is third with 72.7 percent in farms.

In 1959, of the land in farms in Lee County, 58.2 percent was in cropland; 36.8 percent was in woodland; 1.9 percent was in pasture (not cropland and not woodland); and 3.1 percent was in house lots, roads, or wasteland. There were 1,693 farms in the county in 1959. The average size was 112.6 acres. Although 922 farms were between 10 and 50 acres in size, 23 farms were more than 1,000 acres in size.

The number of tractors on farms amounted to 1,149 in 1959, in contrast to 961 in 1954. The number of horses and mules decreased from 2,959 in 1954 to 1,976 in 1959. The present trend in Lee County is toward more mechanization, more efficient farm operation, better land management, and conservation of soil and water.

Principal crops

Cotton has always been the main cash crop. In 1920, the cotton harvest amounted to 56,000 bales. The boll weevil made its first appearance in the county in 1921, and the cotton harvest amounted to only 21,000 bales in 1922. New varieties of cotton that produce less stalk and high yields of lint have been developed, as well as new and effective insecticides. In 1959 cotton was grown on 30,099 acres, and 19,554 bales were harvested.

Bright leaf tobacco was grown on 1,384 acres in 1959, and corn, on 13,685 acres. Soybeans are gaining in importance as a cash crop. Of the 32,222 acres of soybeans grown for all purposes in 1959, beans were harvested from all but 1,949 acres. The harvest amounted to 583,766 bushels.

Of the small grain crops grown in the county, oats and wheat are the most important. Oats were harvested on 15,764 acres in 1959, and wheat, on 7,125 acres.

The sales of all forest products in the county amounted to \$171,490 in 1959, of which \$135,545 came from sales of standing sawtimber. Firewood and fuelwood cut amounted to 1,995 cords, and sawlogs and veneer logs cut amounted to 189,000 board feet. Pulpwood sold amounted to 1,414 cords.

Climate⁶

The climate of Lee County is mild, and rainfall is well distributed throughout the year. The day-to-day weather is controlled mostly by the movement of pressure systems across the country, but there are relatively few complete

⁶This section was prepared by NATHAN KRONBERG, U.S. Weather Bureau State climatologist, Columbia, South Carolina.

exchanges of air masses in summer, since the tropical maritime air masses persist for extended periods.

Wind and humidity records for Lee County are not available, but records at Columbia in Richland County and at Florence in Florence County show that the prevailing winds are from the northeast in winter and from the southwest in summer. The average velocity is about 8 miles an hour. The highest wind velocity ever recorded for a 1-minute period at the Columbia station was 60 miles an hour in March. The average relative humidity at 1 p.m. ranges from a maximum of 58 percent in winter to a minimum of 47 percent in April and May. The average relative humidity for the year, based on four daily readings taken at 1 a.m., 7 a.m., 1 p.m., and 7 p.m., is about 70 percent.

In the average year, 70 to 75 days have one-tenth of an inch or more rain, 30 to 35 days have one-half inch or more, and about 15 days have 1 inch or more. The highest annual rainfall recorded at Bishopville in the last 27 years was 62.34 inches in 1959. The lowest annual rainfall recorded was 29.89 inches in 1951. Records over the State, however, show 1954 to be the driest year on record. It is assumed, therefore, that the annual rainfall in Lee County for 1954 was about 27 inches.

The average annual sunshine is about 65 percent of the possible amount. The range in percent is from the low fifties in December and January to the low seventies in May and June. Skies are cloudy or overcast about 35 percent of the time. The clouds are below 500 feet about 2 percent of the time and below 1,000 feet about 6 percent of the time.

Warm weather usually lasts from some time in May into September, and there are few breaks in the heat in mid-summer. Typically, temperatures of 100° F. are recorded on about 5 days: 1 day in June, 2 days in July, and 2 days in August. Occasionally, temperatures of 100° F. are recorded in spring and fall. Temperatures of 90° F. or higher are recorded on an average of 75 days. The highest temperature ever recorded was 107° F. in July 1940. About 35 percent of the annual rainfall occurs in summer, chiefly in the form of local thundershowers.

Fall generally is the most pleasant season, especially from late in September to early in November. During this period, rainfall is light, the percentage of sunshine is high, and the temperature is generally moderate. Heavy rains and gale-force winds resulting from nearby tropical storms have occurred about five times in the last 30 years. Damage from these storms generally has been minor in the county. The total rainfall in fall is about 22 percent of the total annual rainfall.

Winters are mild and relatively short, although freezing temperatures have been recorded about half the time. There is a good chance of a snow flurry during winter, but a significant snowfall or a snow cover lasting more than 1 or 2 days is unusual. In the average winter, 6 to 8 days have temperatures of 20° F. or lower. The lowest recorded temperature, 6° F., has been recorded only three times and in separate years. Temperatures of 15° F. or less are infrequent; generally they occur on only 1 day each in December and January. About 20 percent of the annual rainfall occurs in winter, in the form of steady rains.

Spring is the most changeable season. In March days are frequently cold and windy, but in May they are generally warm and pleasant. Spring is the season when tornadoes and locally severe storms are likely to occur. Lee County has experienced about five tornadoes in the last 40 years. Spring rainfall represents about 23 percent of the annual total.

The climate of the county is favorable for the principal crops: cotton, tobacco, small grains, corn, soybeans, hay, and peanuts. Moisture is stored in the soils in winter and spring so that, in most years, the soils are at full capacity at the time of planting. There are also enough dry periods to permit tillage (9). Table 10 shows that the average growing season is about 230 days, or long enough for crops to mature even if the crops are planted over a period of weeks or months.

There is a wide range in temperature throughout the year. Table 11 shows the probability of very low or very high temperatures in each month of the year. For example, a maximum temperature higher than 101° F. is likely to occur one summer in two; a temperature higher than 103° F., one summer in five; and a temperature higher than 105° F., one summer in ten. Similarly, a temperature lower than 15° F. is likely to occur one winter in two; a temperature lower than 12° F., one winter in five; and a temperature lower than 10° F., one winter in ten.

TABLE 10.—*Probabilities of last freezing temperature in spring and first in fall*

[In a light freeze, temperatures range from 29° F. to 32° F., and only the tenderest plants are killed. In a moderate freeze, temperatures range from 25° F. to 28° F., and most plants are damaged to some extent. In a severe freeze, temperatures are 24° F. or lower, and most cultivated plants are damaged heavily]

Probability ¹	Dates for given probability and temperature		
	At least a light freeze	At least a moderate freeze	Severe freeze
Spring:			
5 years in 10 later than—	March 27 ² ----	March 9-----	February 20.
2 years in 10 later than—	April 10-----	March 22-----	March 6.
1 year in 10 later than—	April 17-----	March 30-----	March 13.
Fall:			
5 years in 10 earlier than—	November 12 ² —	November 20—	December 2.
2 years in 10 earlier than—	November 2---	November 10—	November 21.
1 year in 10 earlier than—	October 28----	November 4--	November 16.

¹ Number of chances in 10 that event will occur. For example, in 5 years in 10, a severe freeze will occur in spring after February 20; in 2 years in 10, at least a moderate freeze will occur in fall before November 10.

² The interval between these dates, March 27 and November 12, is the growing season, or 230 days.

TABLE 11.—*Temperature and precipitation at Bishopville*

Month	Temperature								Precipitation			
	Average daily maximum	Average daily minimum	1 year in 2 maximum temperature will be higher than—	1 year in 5 maximum temperature will be higher than—	1 year in 10 maximum temperature will be higher than—	1 year in 2 minimum temperature will be lower than—	1 year in 5 minimum temperature will be lower than—	1 year in 10 minimum temperature will be lower than—	Average monthly total	1 year in 10 monthly total will be less than—	1 year in 10 monthly total will be more than—	Snow-fall
	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	Inches	Inches	Inches	Inches
January	57	34	74	76	79	18	14	11	2.4	0.8	4.0	0.4
February	59	35	75	78	81	20	16	11	3.5	1.3	5.7	2.4
March	67	43	83	86	89	28	26	25	3.9	1.4	6.2	(¹)
April	76	51	89	91	92	34	31	29	3.4	.8	6.2	0
May	84	59	94	95	96	46	44	41	2.9	1.1	4.6	0
June	90	67	100	102	104	57	54	51	4.3	2.0	7.2	0
July	90	69	99	101	103	62	61	59	5.8	2.4	9.0	0
August	90	68	97	99	100	59	57	54	5.1	2.0	8.5	0
September ..	85	63	94	97	100	50	47	43	4.4	1.2	7.5	0
October	76	52	88	90	93	34	32	30	2.5	.4	4.8	0
November	66	40	81	83	85	19	18	17	2.6	.8	6.0	(¹)
December	57	35	73	75	78	18	15	11	2.9	.4	6.5	1.7
Year ²	75	51	101	103	105	15	12	10	43.7	34.0	54.5	4.5

¹ Trace.² Averages for the period 1933 to 1959.

The amount of rainfall in the growing season normally is enough for crop development and maturity, but in some years it is either inadequate or excessive. Table 11 shows that extreme monthly and annual deficiencies may occur 1 year in 10, and extreme excesses, 1 year in 10. For example, the average rainfall in July is 5.8 inches, but in 1 year in 10 rainfall may be less than 2.4 inches, and in another July in the same 10-year period, more than 9 inches.

Disastrous droughts occurred in 1925 and 1954 (⁹). Partial droughts occur more often, about once or twice every 10 years. By definition, a drought occurs when there is no water available to a plant in its root zone in the soil. A drought day is a day during which no water is available to the plant. Calculation of drought days is based on the capacity of the soil to hold available moisture, on the amount of precipitation, and on the amount of water used or transpired by plants. Even in average, or normal, years, there are periods when rainfall does not meet the water needs of most crops. Supplementary irrigation is needed for maximum crop production in most sections of the State in most years. During severe droughts, however, there is almost no water available for irrigation.

The probability of a stated number of drought days, for each month from April through October, for five soil storage capacities is shown in table 12. These estimates were obtained by using the Penman method for computing evapotranspiration and by defining a drought day in the terms expressed earlier. The total possible amount of stored moisture available to plants varies with soils and with the depth of roots of different plants. The table, therefore, shows the estimated number of drought days for five levels of storage capacity and five different probability levels. For example, for a soil that has a 2-inch storage capacity, there is a fifty-fifty chance that there will be 8 drought days in Lee County in July.

TABLE 12.—*Probabilities of drought days on soils of five different moisture-storage capacities*

Month ¹	Probability	Minimum number of drought days if soil has a moisture-storage capacity ² of				
		1 inch	2 inches	3 inches	4 inches	5 inches
April	1 in 10...	15	0	0	0	0
	2 in 10...	13	0	0	0	0
	3 in 10...	11	0	0	0	0
	5 in 10...	9	0	0	0	0
May	1 in 10...	25	25	21	14	8
	2 in 10...	23	21	17	9	0
	3 in 10...	21	18	13	0	0
	5 in 10...	17	14	8	0	0
June	1 in 10...	24	24	23	20	18
	2 in 10...	22	20	19	15	13
	3 in 10...	20	17	16	12	9
	5 in 10...	17	13	10	6	0
July	1 in 10...	22	21	20	14	18
	2 in 10...	19	17	16	10	13
	3 in 10...	16	14	13	6	10
	5 in 10...	12	8	7	0	0
August	1 in 10...	20	17	15	14	14
	2 in 10...	17	13	10	10	9
	3 in 10...	15	10	7	6	5
	5 in 10...	11	5	0	0	0
September ..	1 in 10...	22	19	17	15	14
	2 in 10...	19	15	12	9	8
	3 in 10...	17	12	9	5	0
	5 in 10...	14	8	0	0	0
October	1 in 10...	28	27	24	23	22
	2 in 10...	24	22	17	15	12
	3 in 10...	21	17	12	8	6
	5 in 10...	15	10	0	0	0

¹ January, February, March, November, and December are not shown. Crops are rarely damaged by drought in these months.

² The depth of water that a soil can hold and make available to plants.

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Glossary

Aggregate. A mass or cluster of many fine soil particles. Many properties of the aggregate differ from those of an equal mass of unaggregated soil. See Texture.

Alluvium. Sand, mud, and other sediments deposited on land by streams.

Available water. In agriculture, that part of the water in the soil that can be taken up by plants at rates significant to their growth. In engineering, an approximation of the amount of capillary water in a soil that is wet to field capacity; measured in inches per inch of soil.

Calcareous. A term used to describe a soil that contains enough calcium carbonate to effervesce when treated with dilute hydrochloric acid.

Carolina bay. An oval-shaped depression, generally having a north-west-southeast axis; of uncertain origin, but possibly formed by the dissolution of the underlying limestone.

Clay. (1) As a soil separate, mineral soil particles less than 0.002 millimeter in diameter. (2) As a textural class, soil material that is 40 percent or more clay as defined in (1), less than 45 percent sand, and less than 40 percent silt.

Consistence, soil. The combination of properties of soil material that determines its resistance to crushing and its ability to be molded or changed in shape. Consistence depends mainly on the strength and nature of the forces of attraction between soil particles. It varies widely with differences in moisture content; thus, a soil aggregate, or clod, may be hard when dry and plastic when wet.

Terms used to describe consistence when the soil is wet are—

Plastic. Easily rolled between thumb and forefinger into a wire or thin rod of soil without breaking; moderate pressure is required to deform the soil mass. Plastic soils are high in clay and are difficult to till.

Sticky. Adheres to thumb and forefinger after pressure.

Terms used to describe consistence when the soil is moist are—

Firm. Crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable. Firm soils are likely to be difficult to till.

Friable. Crushes easily under gentle to moderate pressure between thumb and forefinger and coheres when pressed together. Friable soils are easily tilled.

Loose. Noncoherent when moist or dry. Loose soils are generally coarse textured and easily tilled.

Terms used to describe consistence when the soil is dry are—

Hard. Moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Soft. Very weakly coherent and fragile and breaks to powder or individual grains under very slight pressure.

Dispersion, soil. The breaking down of soil aggregates into single grains. Ease of dispersion is an important factor influencing the erodibility of soils. Generally speaking, the more easily dispersed the soil, the more erodible it is.

Evapotranspiration. Removal of water from a soil by evaporation and plant transpiration.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes and that differs in one or more ways from adjacent horizons in the same profile. The relative positions of the several soil horizons in the soil profile and their designations are—

A horizon. The master horizon consisting of (1) one or more mineral horizons of maximum organic accumulation; or (2) surface or subsurface horizons that are lighter in color than the underlying horizon and have lost clay minerals, iron, and aluminum, with resultant concentration of the more resistant minerals; or (3) horizons belonging to both of these categories.

B horizon. The master horizon of altered material characterized by (1) an accumulation of clay, iron, or aluminum, with accessory organic matter; or (2) blocky or prismatic structure together with other characteristics, such as stronger colors, unlike those of the A horizon or the underlying horizons of nearly unchanged material; or (3) characteristics of both these categories. Commonly, the lower limit of the B horizon corresponds to the lower limit of the solum.

C horizon. A layer of unconsolidated material, relatively little affected by organisms and in chemical, physical, and mineralogical composition presumed to be similar to the material from which at least a part of the solum has developed.

D horizon. Any stratum underlying the C horizon, or the B if no C is present, which is unlike the C horizon or unlike the material from which the solum has been formed.

Any major horizon (A, B, C, or D) may or may not consist of two or more subdivisions or subhorizons, and each subhorizon in turn may or may not have subdivisions.

Infiltration rate. The rate at which water is penetrating the surface of the soil at any given instant, usually expressed in inches per hour. May be limited either by the infiltration capacity of the soil or by the rate at which water is applied to the soil surface.

Intake rate. The rate, generally expressed in inches per hour, at which rain or irrigation water enters the soil. This rate is controlled partly by surface conditions (infiltration rate) and partly by subsurface conditions (permeability). It also varies with the method of applying water. The same kind of soil has different intake rates under sprinkler irrigation, border irrigation, and furrow irrigation.

Internal drainage. The movement of water through the soil profile. The rate of movement is affected by the texture of the surface layer and subsoil, and by the height of the water table, either permanent or perched. Relative terms for describing internal drainage are: *very rapid, rapid, medium, slow, very slow, and none.*

Liquid limit. The moisture content at which a soil passes from a plastic to a liquid state, expressed as a percentage.

Loam. The textural class name for soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.

Natural drainage. The condition that existed during the development of the soil, as opposed to altered drainage. Drainage is generally altered by artificial means or by irrigation but may be altered by sudden deepening of channels or sudden blocking of drainage outlets. The following relative terms are used to describe natural drainage: *excessive*, *good*, *moderately good*, *somewhat poor* (or *imperfect*), *poor*, and *very poor*.

Permeability, soil. That quality of a soil that enables it to transmit air and water. The permeability of the soil may be limited by the presence of one nearly impermeable horizon, even though the others are permeable. Moderately permeable soils transmit air and water readily, a condition that is favorable for the growth of roots. Slowly permeable soils allow water and air to move so slowly that root growth is restricted. Rapidly permeable soils transmit air and water rapidly, and root growth is good.

Plastic limit.—The moisture content at which a soil changes from a semisolid to a plastic state.

Plasticity index. The numerical difference between the plastic limit and the liquid limit; thus, the range in moisture content through which the soil remains plastic.

Poorly graded soil (engineering). Soil material consisting mainly of particles nearly the same size. Because there is little difference in size of particles, density can be increased only slightly by compaction.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil mass, expressed either in pH value or in words, as follows:

	pH
Extremely acid.....	Below 4.5
Very strongly acid.....	4.5 to 5.0
Strongly acid.....	5.1 to 5.5
Medium acid.....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral.....	6.6 to 7.3
Mildly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline.....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively; also, the difference in elevation between the hilltops, or summits, and the lowlands of a region.

Road subgrade. Material at the surface or just below the finished grade, on which the base soil material for pavement is placed.

Runoff. Removal of water by flow over the surface of the soil. The amount and rapidity of runoff are affected by texture, structure, and porosity of the surface soil; by the plant cover; by the prevailing climate; and by the slope. The degree of runoff is expressed by the following terms: *very rapid*, *rapid*, *medium*, *slow*, *very slow*, and *pounded*.

Sand. (1) As a soil separate, rock or mineral fragments that are 0.05 millimeter to 2.0 millimeters in diameter. Sand grains are generally quartz, but they may be of any mineral composition. (2) As a soil textural class, soil material that is 85 percent or more sand and not more than 10 percent clay.

Shrink-swell potential. The ability of a soil to lose volume, or shrink, with a loss in water content and to gain volume, or swell, with an increase in water content.

Silt. (1) As a soil separate, mineral particles that are 0.002 millimeter to 0.05 millimeter in diameter. (2) As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Structure, soil. The arrangement of the individual soil particles into aggregates that have definite shape and pattern. Structure is described in terms of grade—*weak*, *moderate*, and *strong*, that is, the degree of distinctiveness and durability of the aggregates; by class—*very fine* or *very thin*, *fine* or *thin*, *medium*, *coarse* or *thick*, and *very coarse* or *very thick*, that is, the size of the aggregates; and by type or shape—*blocky*, *subangular blocky*, *columnar*, *crumb*, *granular*, *platy*, and *prismatic*. *Structureless* is that condition in which there are no observable aggregates or no definite orderly arrangement of natural lines of weakness—*massive* if coherent and *single grain* if noncoherent.

Blocky, angular. The aggregates are shaped like blocks and the surfaces join at sharp angles. If the term "blocky" is used alone, angular blocky is understood.

Blocky, subangular. The aggregates have some rounded and some flat surfaces; the upper faces are rounded.

Columnar. The particles are arranged around a vertical line and are bounded by relatively flat surfaces; the height of the aggregates is greater than the width, and the upper ends are rounded.

Crumb. The particles are arranged around a point into aggregates that are irregular but tend toward a spherical shape; the aggregates are soft, small, and porous.

Granular. The aggregates are roughly spherical, firm, and small; they may be either hard or soft but generally are more firm and less porous than crumb and are without the distinct faces of blocky structure.

Platy. The particles are arranged around a plane, generally horizontal; the aggregates are flaky or platelike.

Prismatic. The particles are arranged around a vertical line and are bounded by flat surfaces; the upper ends are not rounded.

Subsoil. Technically, the B horizon of a soil that has distinct horizons. In more general terms, that part of the soil profile below plow depth in which roots normally grow.

Substratum. Any layer beneath the solum, or true soil. The term is applied both to parent material and to other layers unlike the parent material that lie below the B horizon or the subsoil.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches thick.

Texture, soil. The relative proportions of the various size groups of individual soil grains in a mass of soil; specifically, the proportions of sand, silt, and clay. Soil textural classes named in classifying the soils in this county are *sand*, *loamy sand*, *loamy fine sand*, *sandy loam*, *fine sandy loam*, *loam*, and *silt loam*.

Topsoil (engineering and landscaping). Presumably fertile soil material, rich in organic matter, that is used to topdress roadbanks, lawns, and gardens.

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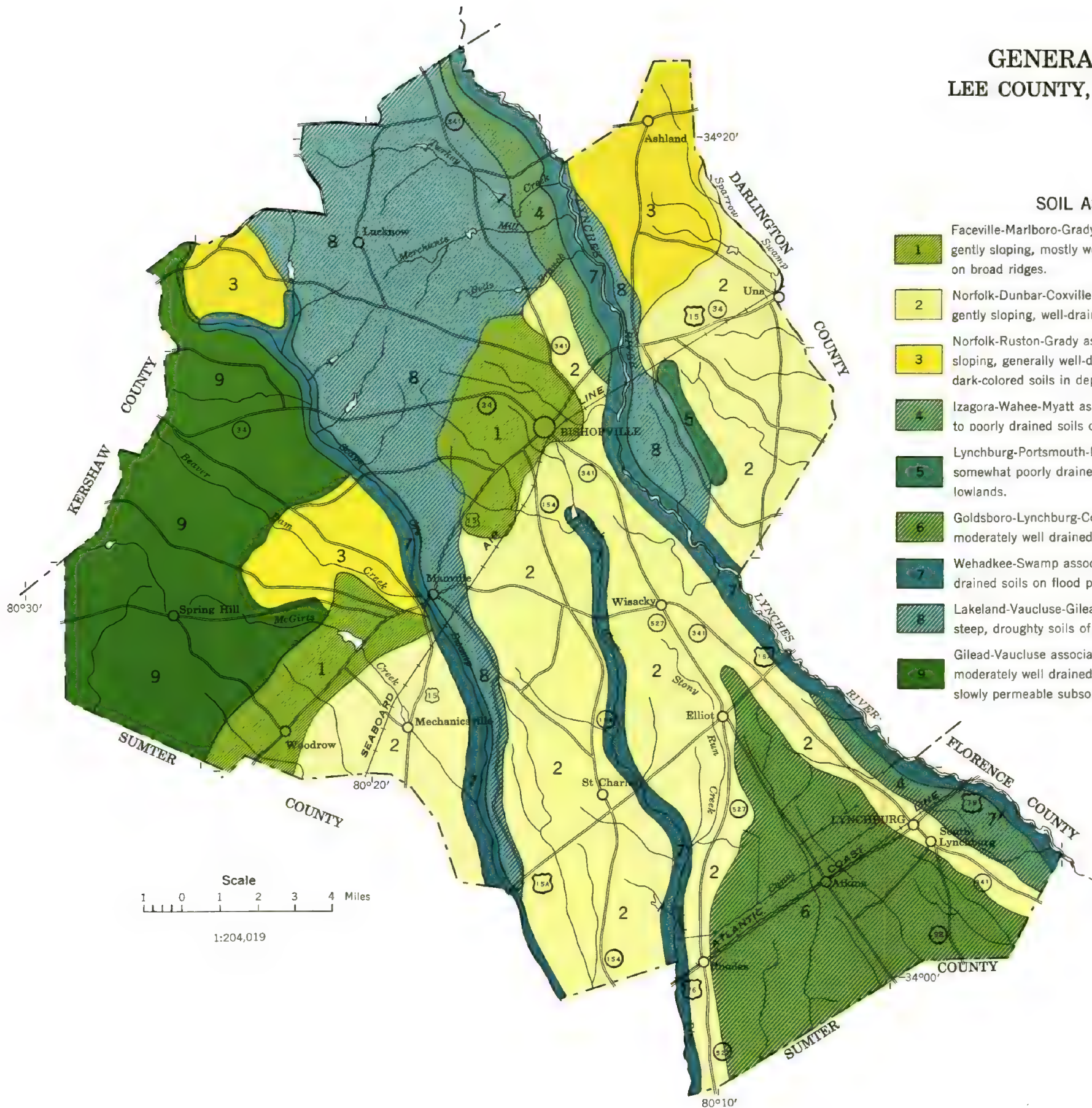
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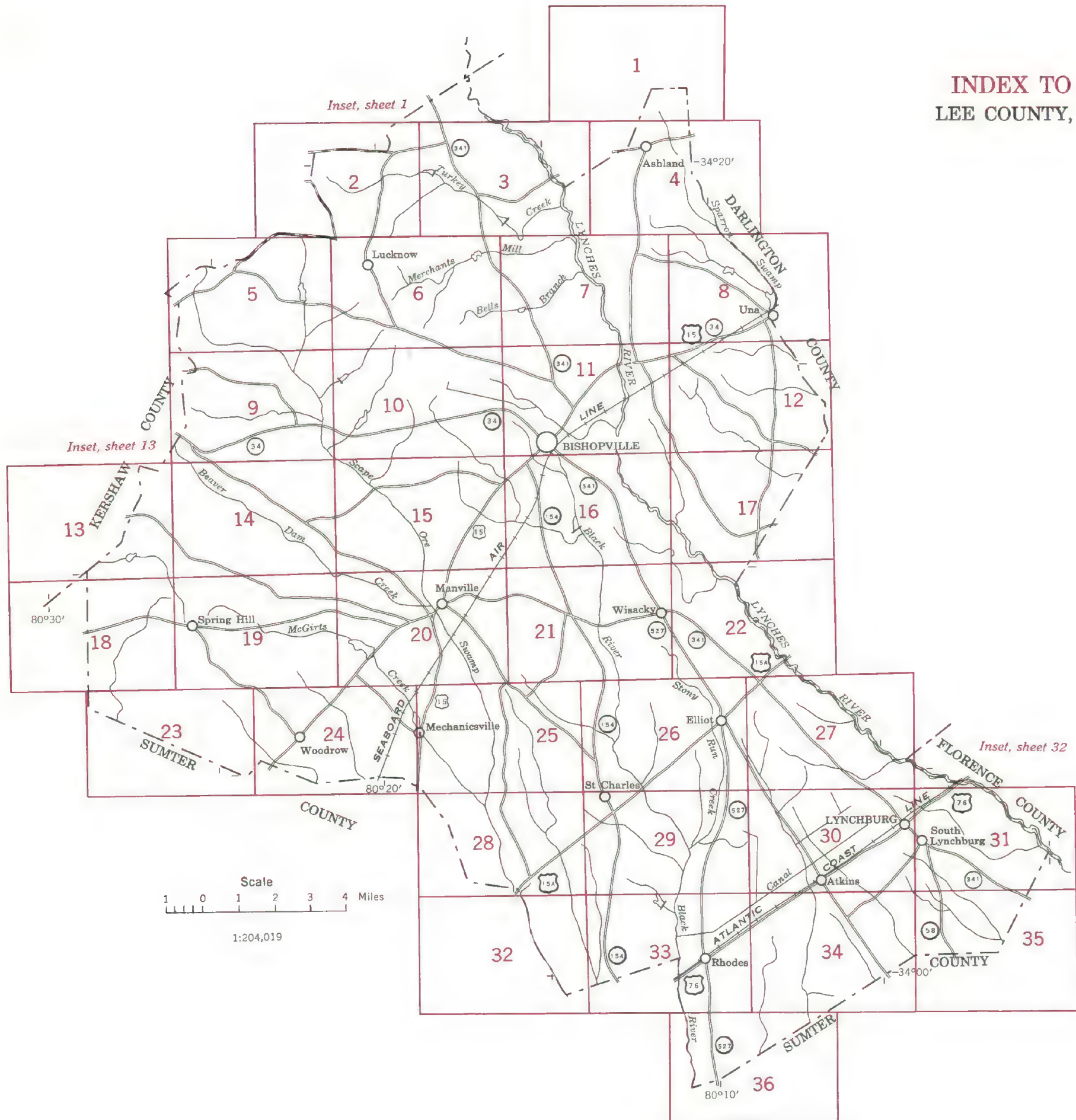
GENERAL SOIL MAP LEE COUNTY, SOUTH CAROLINA

SOIL ASSOCIATIONS

-  Faceville-Marlboro-Grady association: nearly level to gently sloping, mostly well-drained, red and yellow soils on broad ridges.
-  Norfolk-Dunbar-Coxville association: nearly level to gently sloping, well-drained to poorly drained soils.
-  Norfolk-Ruston-Grady association: nearly level to gently sloping, generally well-drained soils, and poorly drained, dark-colored soils in depressions.
-  Izagora-Wahee-Myatt association: moderately well drained to poorly drained soils on stream terraces.
-  Lynchburg-Portsmouth-Rutledge association: nearly level, somewhat poorly drained to very poorly drained soils on lowlands.
-  Goldsboro-Lynchburg-Coxville association: nearly level, moderately well drained to poorly drained soils.
-  Wehadkee-Swamp association: nearly level, very poorly drained soils on flood plains.
-  Lakeland-Vaocluse-Gilead association: nearly level to steep, droughty soils of the Sand Hills.
-  Gilead-Vaocluse association: very gently sloping to steep, moderately well drained soils that have a compact, slowly permeable subsoil.



INDEX TO MAP SHEETS LEE COUNTY, SOUTH CAROLINA



SOIL LEGEND

The first capital letter in each soil symbol is the initial one of the soil name. A second capital letter, A, B, C, D, or E, shows the slope. Symbols without a slope letter are those of nearly level soils, such as Okenee loam, or of land types, such as Gullied land, that have a range of slope. A final number, 2 or 3, shows that the soil is eroded or severely eroded.

SYMBOL	NAME	SYMBOL	NAME
Bp	Borrow pits	NfA	Norfolk loamy fine sand, 0 to 2 percent slopes
Ca	Cahaba sandy loam	NoA	Norfolk loamy sand, 0 to 2 percent slopes
Co	Coxville sandy loam	NoB	Norfolk loamy sand, 2 to 6 percent slopes
Cx	Coxville loam	NoB2	Norfolk loamy sand, 2 to 6 percent slopes, eroded
Du	Dunbar sandy loam	NoC	Norfolk loamy sand, 6 to 10 percent slopes
EnB	Eustis sand, 0 to 6 percent slopes	NoC2	Norfolk loamy sand, 6 to 10 percent slopes, eroded
EsA	Eustis sand, shallow, 0 to 2 percent slopes	NtA	Norfolk loamy sand, thick surface, 0 to 2 percent slopes
EsB	Eustis sand, shallow, 2 to 6 percent slopes	NtB	Norfolk loamy sand, thick surface, 2 to 6 percent slopes
EsC	Eustis sand, shallow, 6 to 10 percent slopes	NtC	Norfolk loamy sand, thick surface, 6 to 10 percent slopes
FaA	Faceville loamy sand, 0 to 2 percent slopes	Ok	Okenee oam
FaB	Faceville loamy sand, 2 to 6 percent slopes	OrA	Orangeburg loamy sand, 0 to 2 percent slopes
FaB2	Faceville loamy sand, 2 to 6 percent slopes, eroded	OrB	Orangeburg loamy sand, 2 to 6 percent slopes
FaC2	Faceville loamy sand, 6 to 10 percent slopes, eroded	OrB2	Orangeburg loamy sand, 2 to 6 percent slopes, eroded
GeA	Gilead loamy sand, 0 to 2 percent slopes	OrC2	Orangeburg loamy sand, 6 to 10 percent slopes, eroded
GeB	Gilead loamy sand, 2 to 6 percent slopes	Pm	Plummer loamy sand
GeB2	Gilead loamy sand, 2 to 6 percent slopes, eroded	Pn	Plummer sand, terrace
GeC	Gilead loamy sand, 6 to 10 percent slopes	Po	Portsmouth loam
GeC2	Gilead loamy sand, 6 to 10 percent slopes, eroded	Ps	Portsmouth sandy loam
GeD	Gilead loamy sand, 10 to 15 percent slopes	Ra	Rains loamy sand
GeD2	Gilead loamy sand, 10 to 15 percent slopes, eroded	RaA	Ruston loamy sand, 0 to 2 percent slopes
GkB	Gilead loamy sand, thick surface, 2 to 6 percent slopes	RaB	Ruston loamy sand, 2 to 6 percent slopes
GkC	Gilead loamy sand, thick surface, 6 to 10 percent slopes	RaB2	Ruston loamy sand, 2 to 6 percent slopes, eroded
Go	Goldsboro loamy sand	RaC	Ruston loamy sand, 6 to 10 percent slopes
Gr	Grady loam	RaC2	Ruston loamy sand, 6 to 10 percent slopes, eroded
Gs	Grady sandy loam	RtA	Ruston loamy sand, thick surface, 0 to 2 percent slopes
Gu	Gullied land	RtB	Ruston loamy sand, thick surface, 2 to 6 percent slopes
Iz	Izagora sandy loam	RtC	Ruston loamy sand, thick surface, 6 to 10 percent slopes
Ka	Kalmia loamy sand	RJ	Rutledge loamy sand
Kt	Kalmia loamy sand, thick surface	Sw	Swamp
LaB	Lakeland sand, 0 to 6 percent slopes	VaB	Vaocluse loamy sand, 2 to 6 percent slopes
LaD	Lakeland sand, 6 to 15 percent slopes	VaB2	Vaocluse loamy sand, 2 to 6 percent slopes, eroded
LkA	Lakeland sand, shallow, 0 to 2 percent slopes	VaC	Vaocluse loamy sand, 6 to 10 percent slopes
LkB	Lake and sand, shallow, 2 to 6 percent slopes	VaC2	Vaocluse loamy sand, 6 to 10 percent slopes, eroded
LkC	Lakeland sand, shallow, 6 to 10 percent slopes	VaD	Vaocluse loamy sand, 10 to 15 percent slopes
LnB	Lakeland sand, terrace, 0 to 6 percent slopes	VaD2	Vaocluse loamy sand, 10 to 15 percent slopes, eroded
LoC	Lakewood sand, 0 to 10 percent slopes	VaE2	Vaocluse loamy sand, 15 to 25 percent slopes, eroded
Ls	Leaf fine sandy loam	VtB	Vaocluse loamy sand, thick surface, 2 to 6 percent slopes
Lv	Local alluvial land	VtD	Vaocluse loamy sand, thick surface, 6 to 15 percent slopes
Ly	Lynchburg sandy loam	VyC3	Vaocluse sandy loam, 6 to 10 percent slopes, severely eroded
MaA	Magnolia loamy sand, 0 to 2 percent slopes	Wa	Wahee fine sandy loam
MaB2	Magnolia loamy sand, 2 to 6 percent slopes, eroded	We	Wehadkee silt loam
MbA	Marlboro loamy sand, 0 to 2 percent slopes		
MbB	Marlboro loamy sand, 2 to 6 percent slopes		
MbB2	Marlboro loamy sand, 2 to 6 percent slopes, eroded		
MbC2	Marlboro loamy sand, 6 to 10 percent slopes, eroded		
Mx	Mixed alluvial and		
My	Myatt sandy loam		

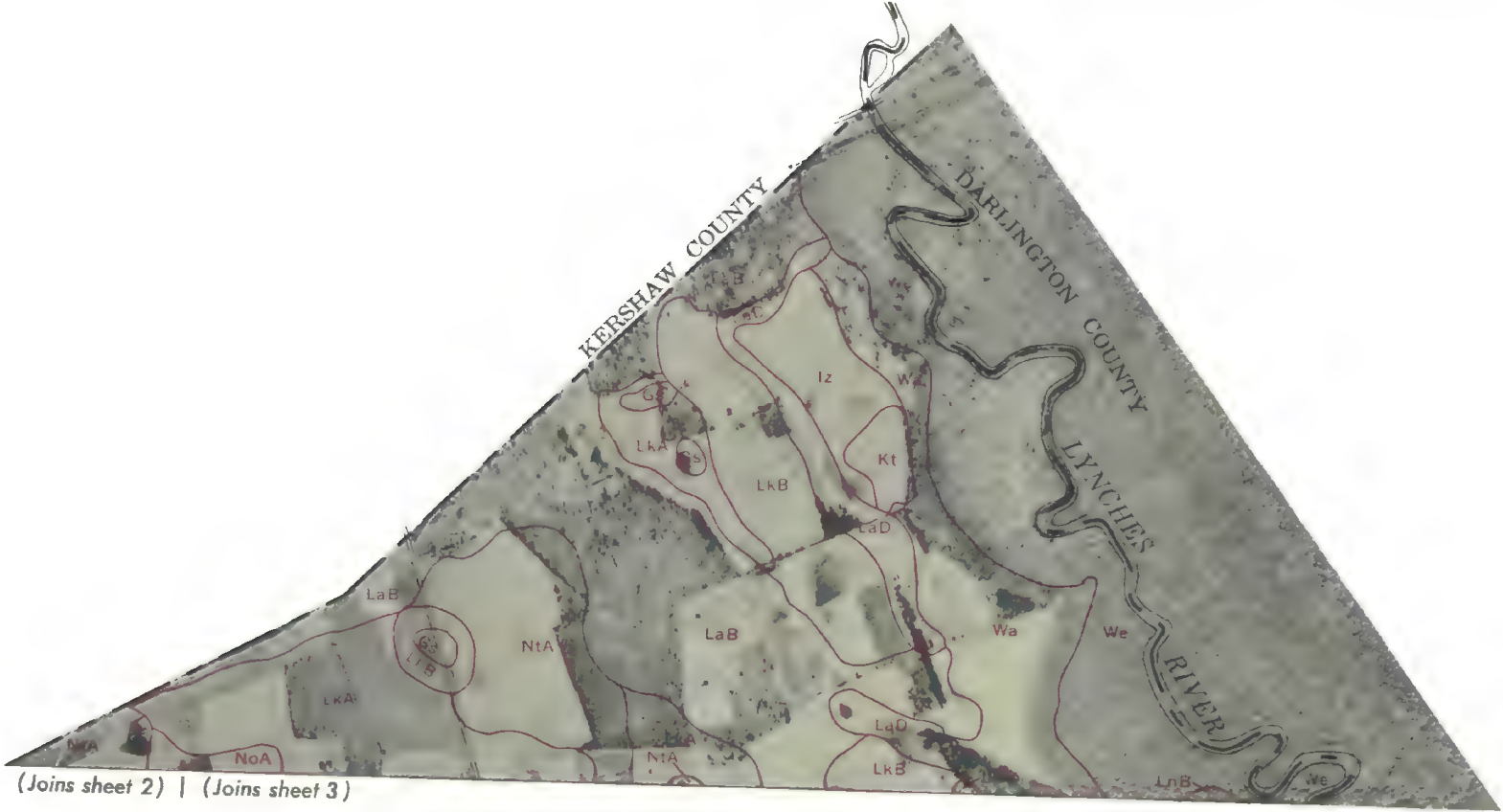
WORKS AND STRUCTURES	
Highways and roads	
Dual	
Good motor	
Poor motor	
Trail	
Highway markers	
National Interstate	
U. S.	
State	
Railroads	
Single track	
Multiple track	
Abandoned	
Bridges and crossings	
Road	
Trail, foot	
Railroad	
Ferries	
Ford	
Grade	
R. R. over	
R. R. under	
Tunnel	
Buildings	
School	
Church	
Station	
Mines and Quarries	
Mine dump	
Pits, gravel or other	
Power lines	
Pipe lines	
Cemeteries	
Dams	
Levees	
Tanks	
Oil wells	

CONVENTIONAL SIGNS	
BOUNDARIES	
National or state	
County	
Township, U. S.	
Section line, corner	
Reservation	
Land grant	
Township, civil	
DRAINAGE	
Streams	
Perennial	
Intermittent, unclass.	
Canals and ditches	
Lakes and ponds	
Perennial	
Intermittent	
Wells	
Springs	
Marsh	
Wet spot	

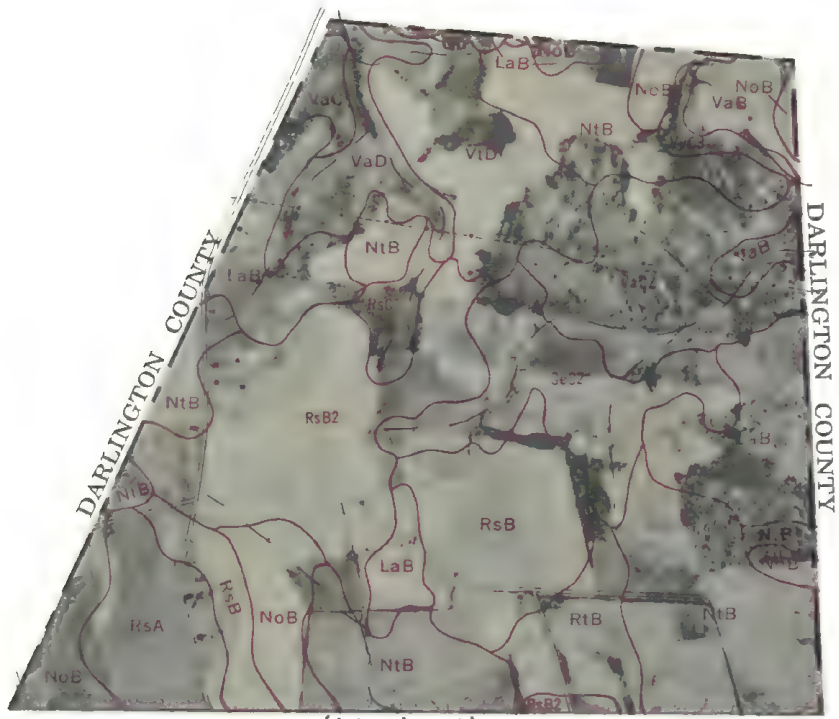
RELIEF	
Escarpments	
Bedrock	
Other	
Prominent peaks	
Depressions	
Crossable with tillage implements	
Not crossable with tillage implements	
Contains water most of the time	

SOIL SURVEY DATA	
Soil boundary and symbol	
Gravel	
Stones	
Rock outcrops	
Chert fragments	
Clay spot	
Sand spot	
Gumbo or scabby spot	
Made land	
Severely eroded spot	
Blowout, wind erosion	
Gullies	

Soil map constructed 1961 by Cartographic Division, Soil Conservation Service, USDA, from 1957 aerial photographs. Controlled mosaic based on South Carolina plane coordinate system, north zone, Lambert conformal conic projection, 1927 North American datum.



(Joins sheet 2) | (Joins sheet 3)



(Joins sheet 4)

0 1/2 1 Mile Scale 1:20 000 0 5000 Feet

(Joins sheet 6)

10



(Joins sheet 9)



(Joins sheet 15)





(Joins sheet 10)

(Joins sheet 12)



0 1/2 1 Mile Scale 1:20 000 0 5000 Feet

(Joins sheet 16)

(Joins sheet 8)



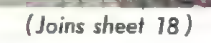
(Joins sheet 11)



(Joins sheet 17)



KERSHAW COUNTY
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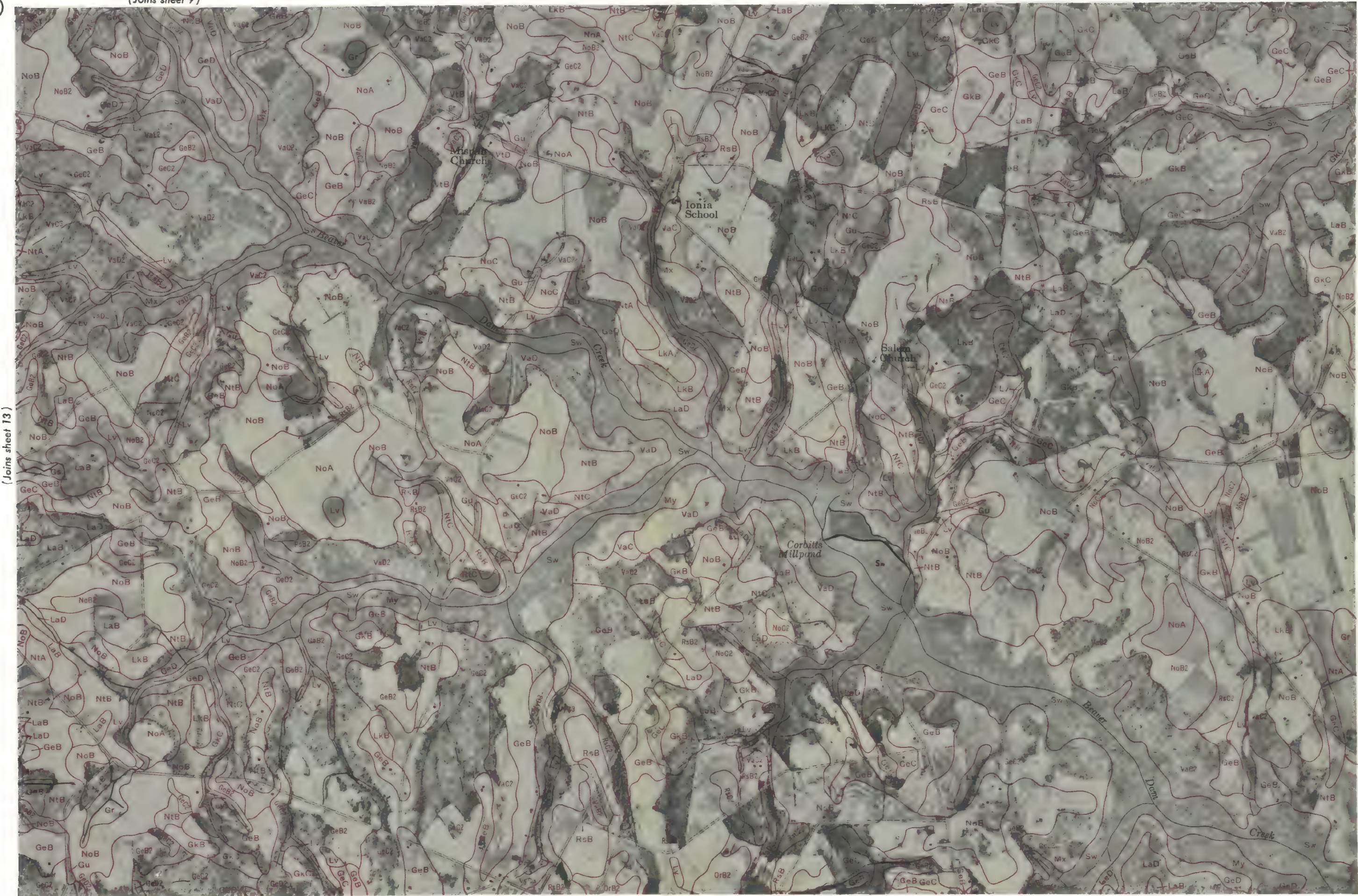


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(Joins sheet 9)

14



(Joins sheet 13)

(Joins sheet 15)

(Joins sheet 19)



(Joins sheet 10)



This is one of a set of maps prepared by the Soil Conservation Service, U. S. Department of Agriculture, for a soil survey report of this area. For information regarding the complete soil survey report, write the Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C. This map compiled from aerial photographs flown in 1957.

(Joins sheet 14)



(Joins sheet 16)



(Joins sheet 20)

(Joins sheet 11)

16



(Joins sheet 15)



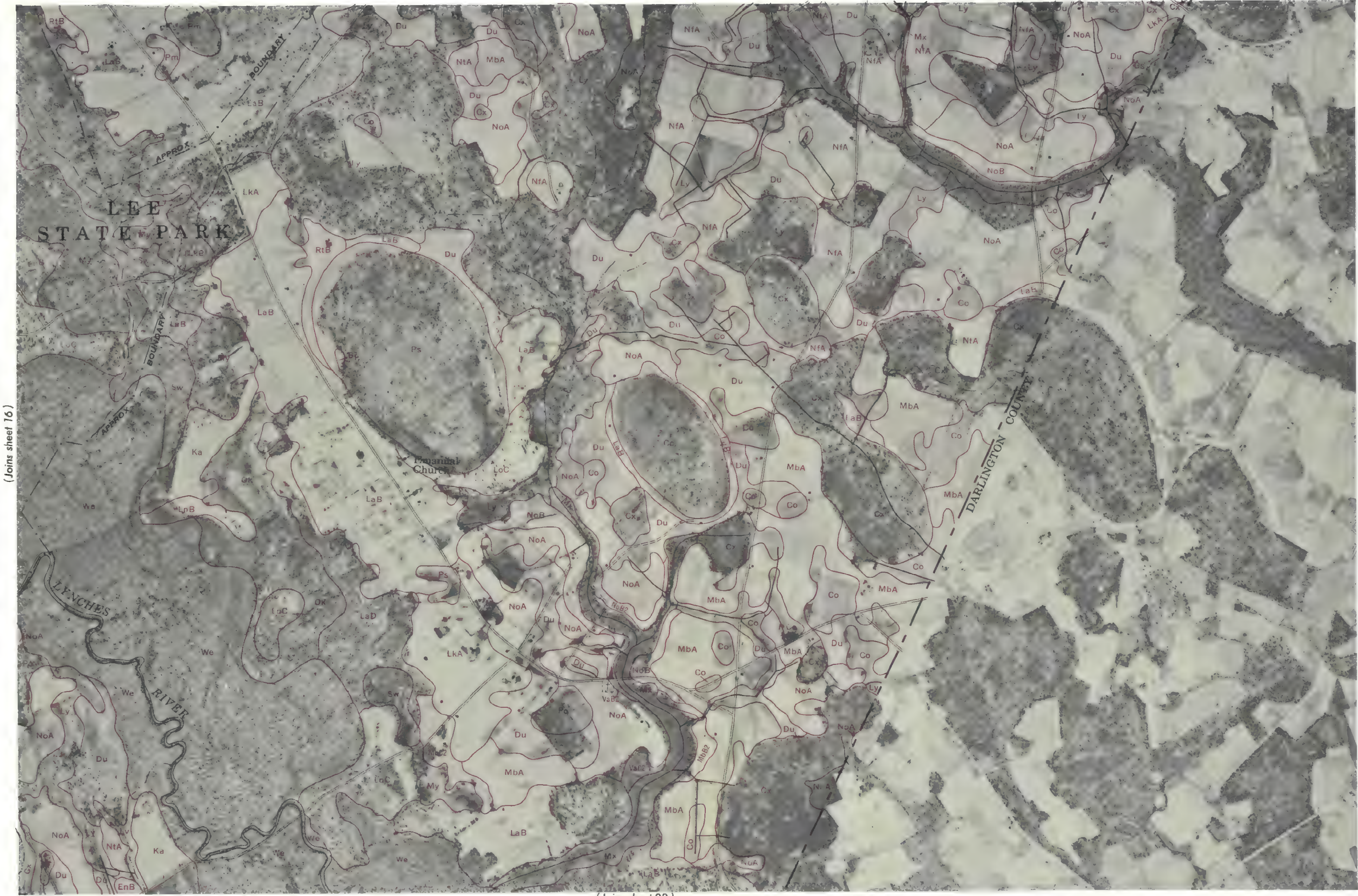
(Joins sheet 17)

(Joins sheet 21)





(Joins sheet 16)



(Joins sheet 22)



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(Joins sheet 19)

0 $\frac{1}{2}$ 1 Mile Scale 1:20 000 0 5000 Feet

(Joins sheet 23)

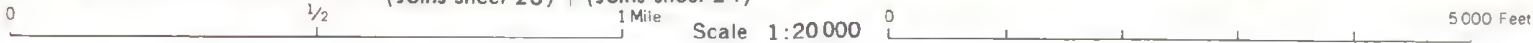


(Joins sheet 18)

(Joins sheet 20)



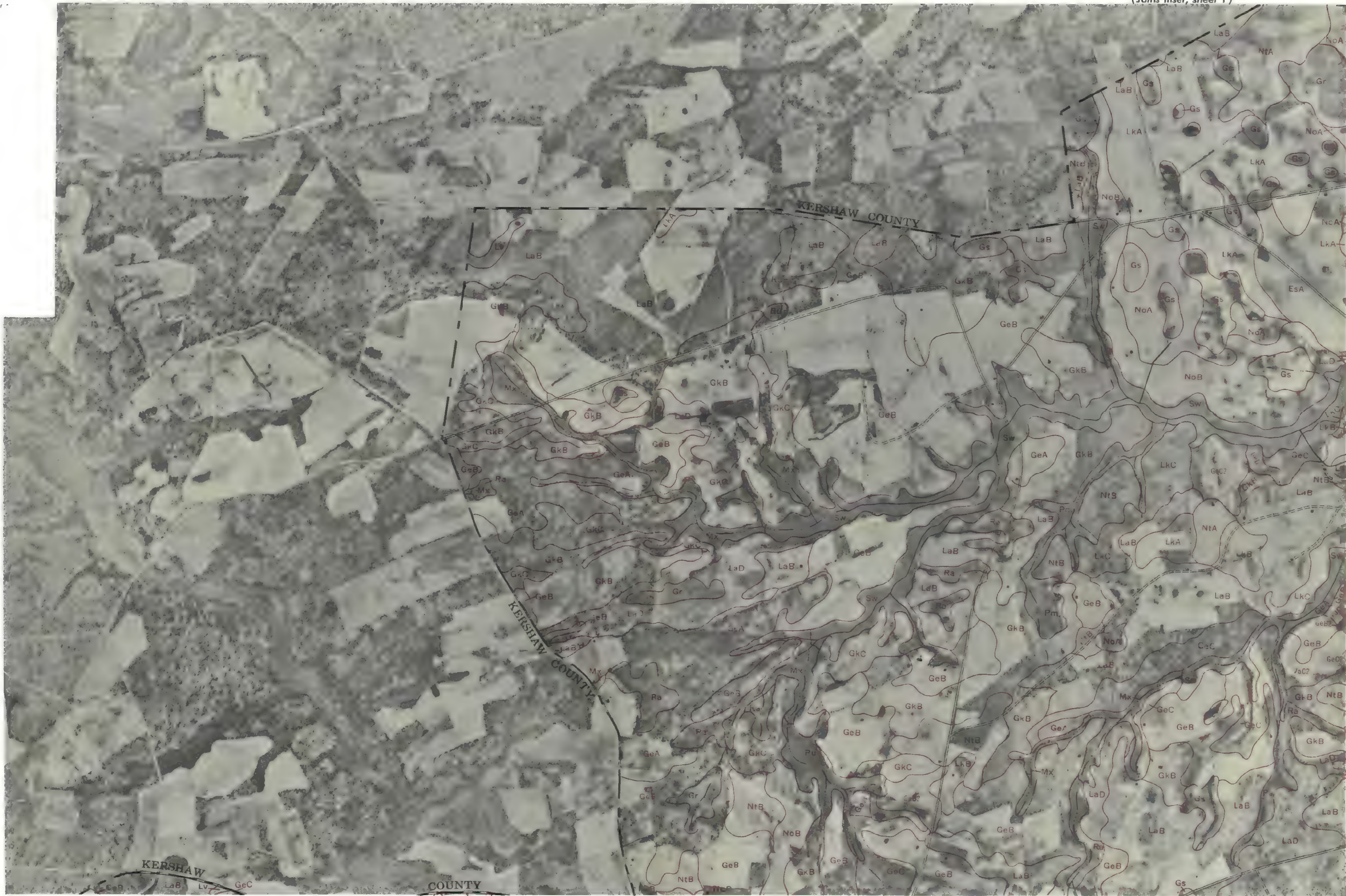
(Joins sheet 23) | (Joins sheet 24)



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(Joins inset, sheet 1)

2



(Joins sheet 3)

GeC2 Sw GeC2 GeB2 GeB

(Joins sheet 5) | (Joins sheet 6)

0 1/2 1 Mile Scale 1:20000 0 5000 Feet



(Joins sheet 19)



(Joins sheet 21)



(Joins sheet 20)

(Joins sheet 22)

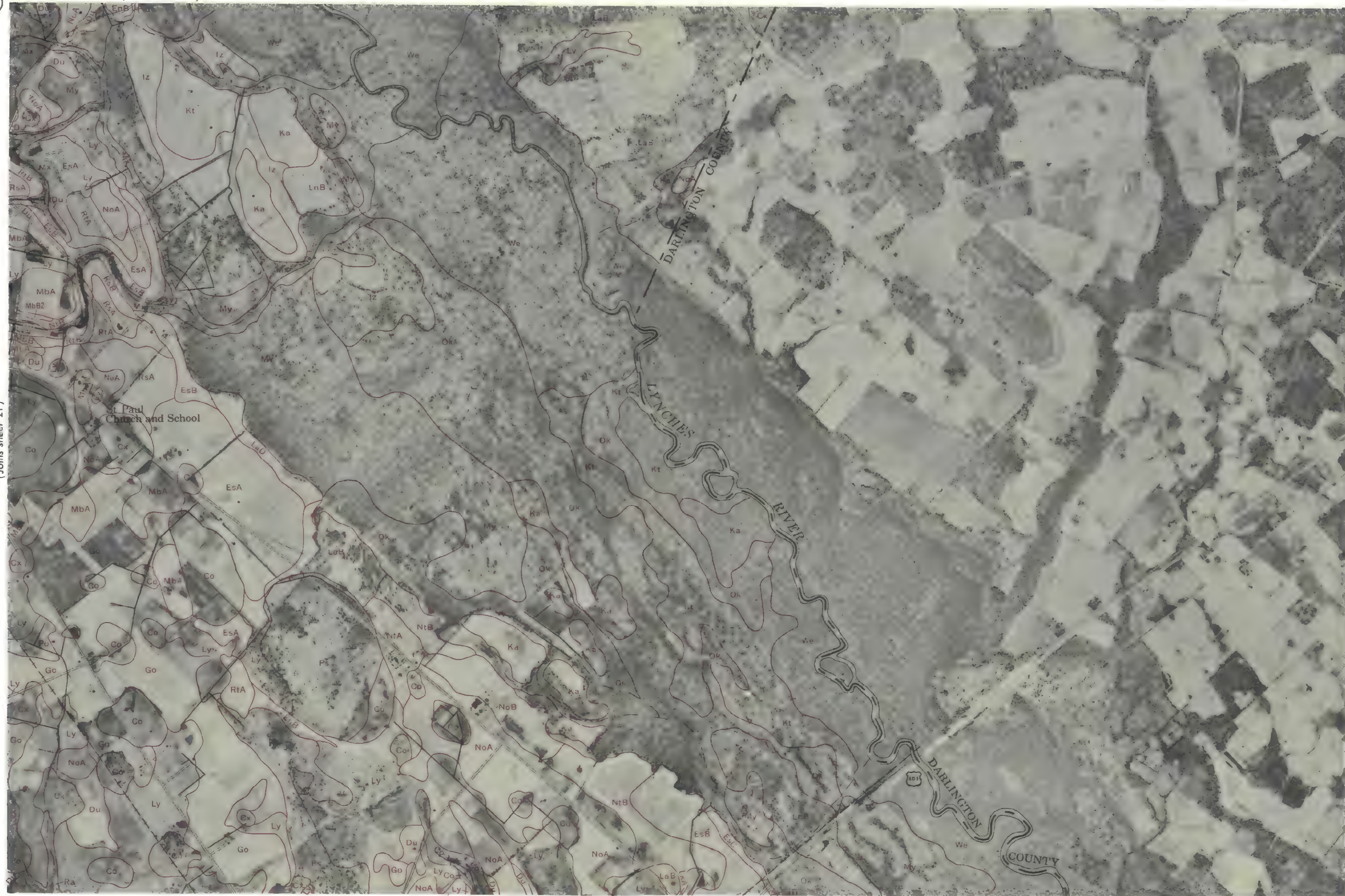


(Joins sheet 25) | (Joins sheet 26)



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(Joins sheet 21)



(Joins sheet 26) | (Joins sheet 27)

Scale 1:20 000

5000 Feet

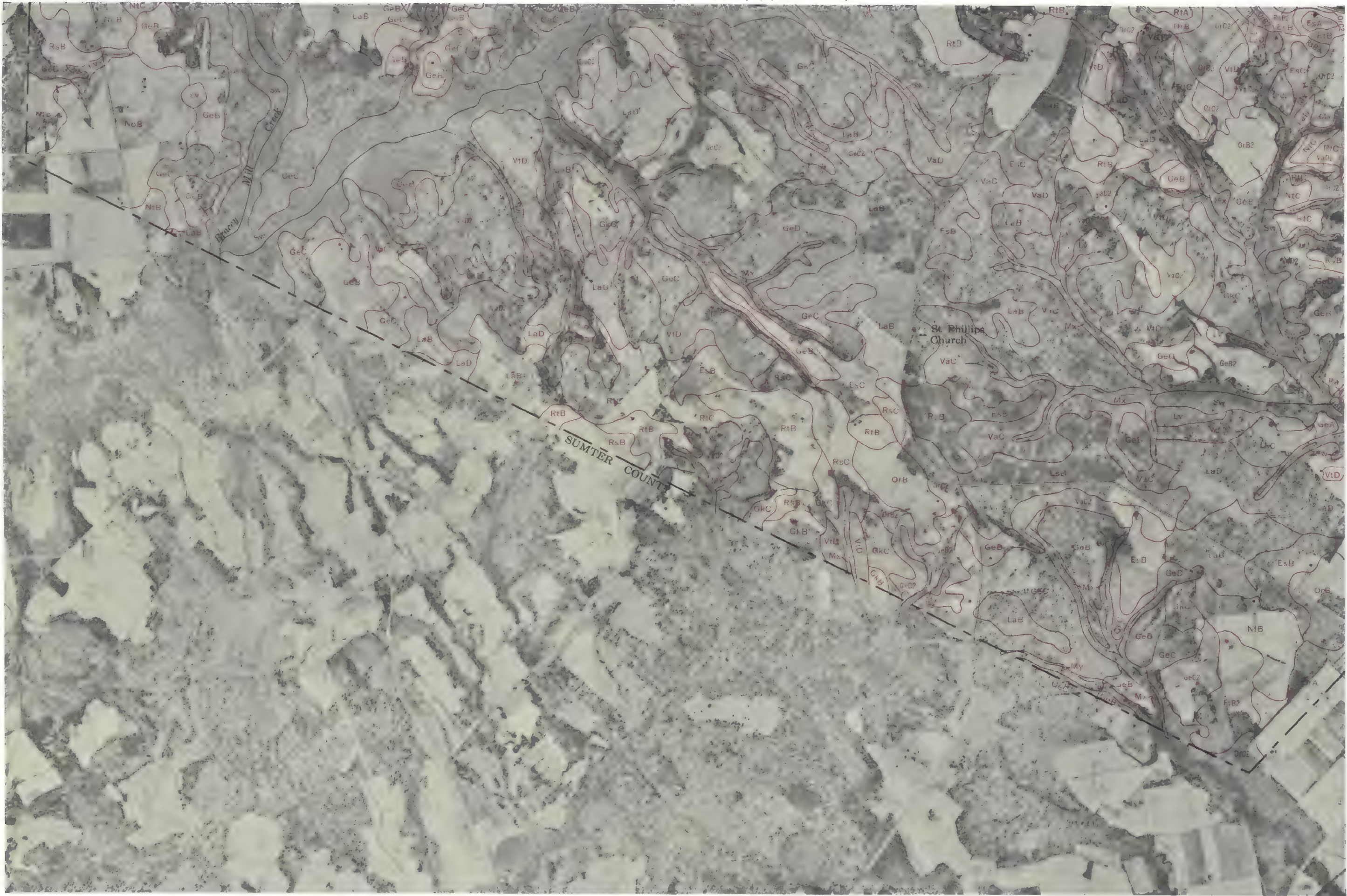
LEE COUNTY, SOUTH CAROLINA - SHEET NUMBER 23
(Joins sheet 18) | (Joins sheet 19)

23

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(Joins sneet 24)

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0 $\frac{1}{2}$ 1 Mile Scale 1:20 000 0 5 000 Feet

24



(Joins sheet 23)



(Joins sheet 25)



(Joins sheet 24)

(Joins sheet 26)

(Joins sheet 28)

0 1/2 1 Mile Scale 1:20000 0 5000 Feet

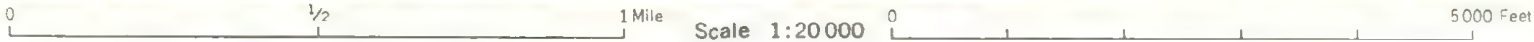
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(Joins sheet 25)



(Joins sheet 29)



(Joins sheet 27)

(Joins sheet 22)

27

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(Joins sheet 26)

(Joins inset, sheet 32)

(Joins sheet 30)

0 1/2 1 Mile Scale 1:20000 0 5000 Feet

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McDonald School

DARLINGTON COUNTY

LYNCHES RIVER



(Joins sheet 29)



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(Joins sheet 28)



(Joins inset, sheet 1)



(Joins sheet 2)

(Joins sheet 4)

DARLINGTON COUNTY

LYNCHES RIVER

Turkey Creek

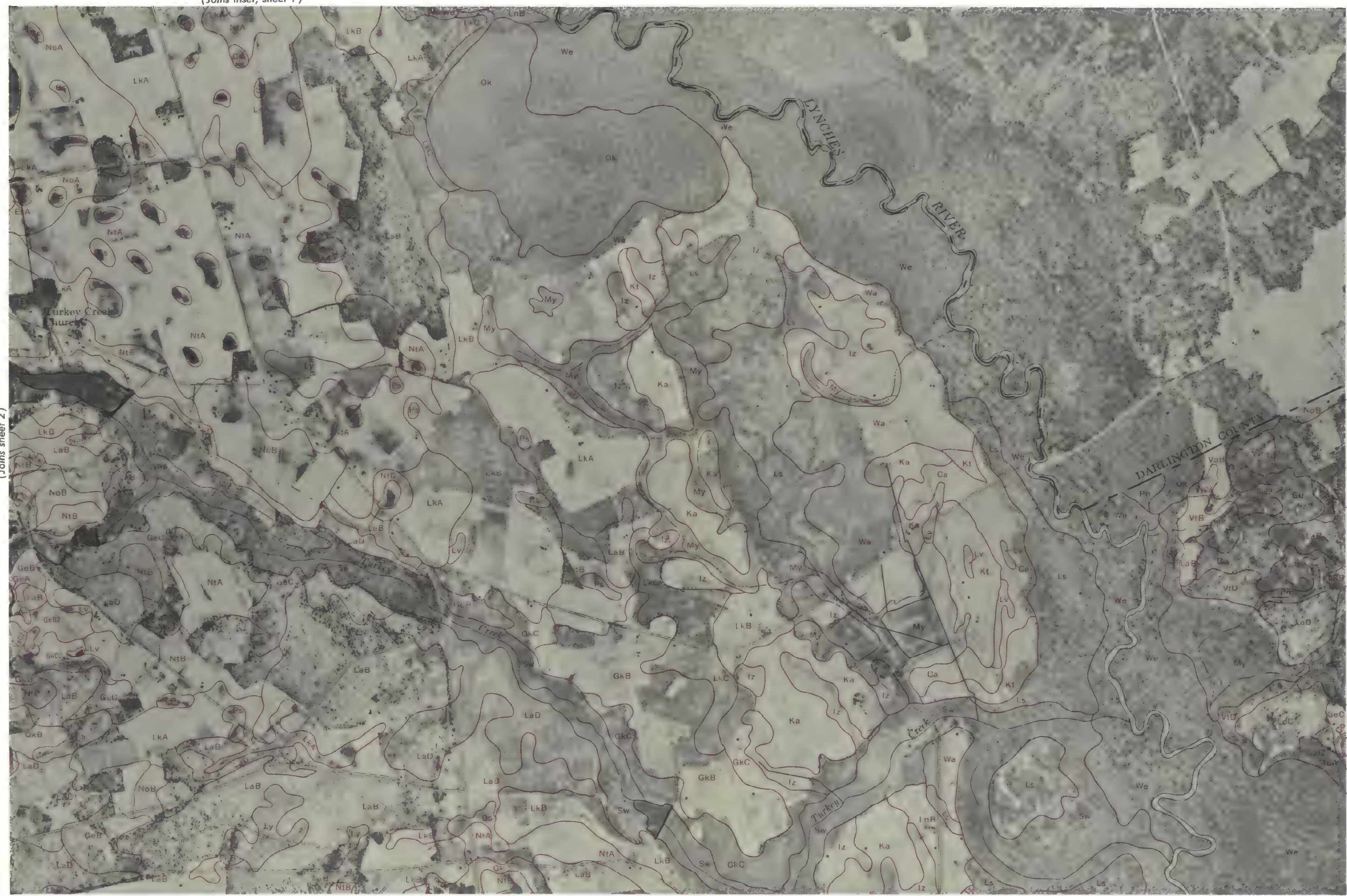
Creek

Turkey Creek

(Joins sheet 6) | (Joins sheet 7)



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(Joins sheet 27)

(Joins sheet 34)

0 $\frac{1}{2}$ 1 Mile Scale 1:20 000 0 5000 Feet

Scale 1:20 000

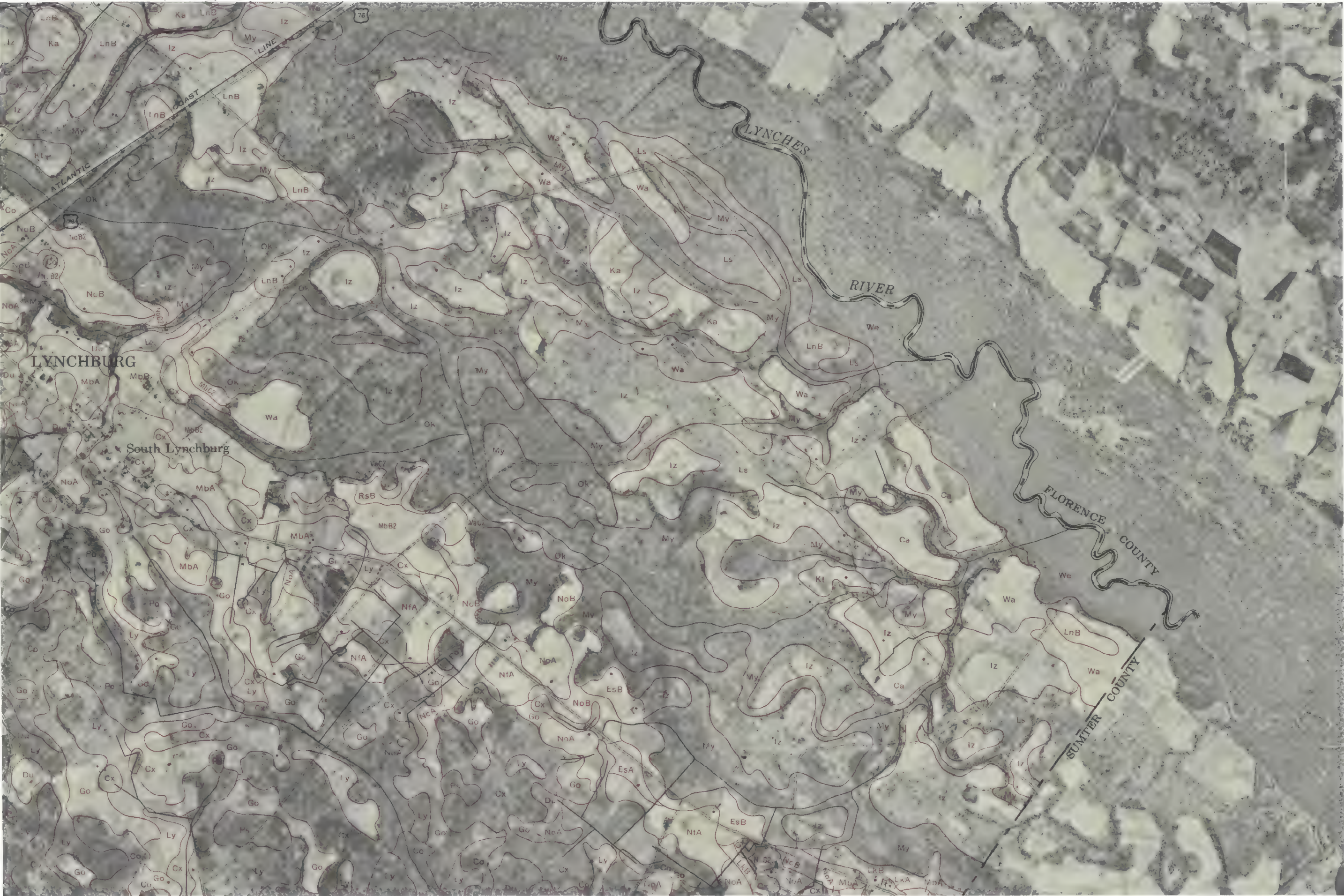
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(Joins sheet 31)

(Joins inset, sheet 32)

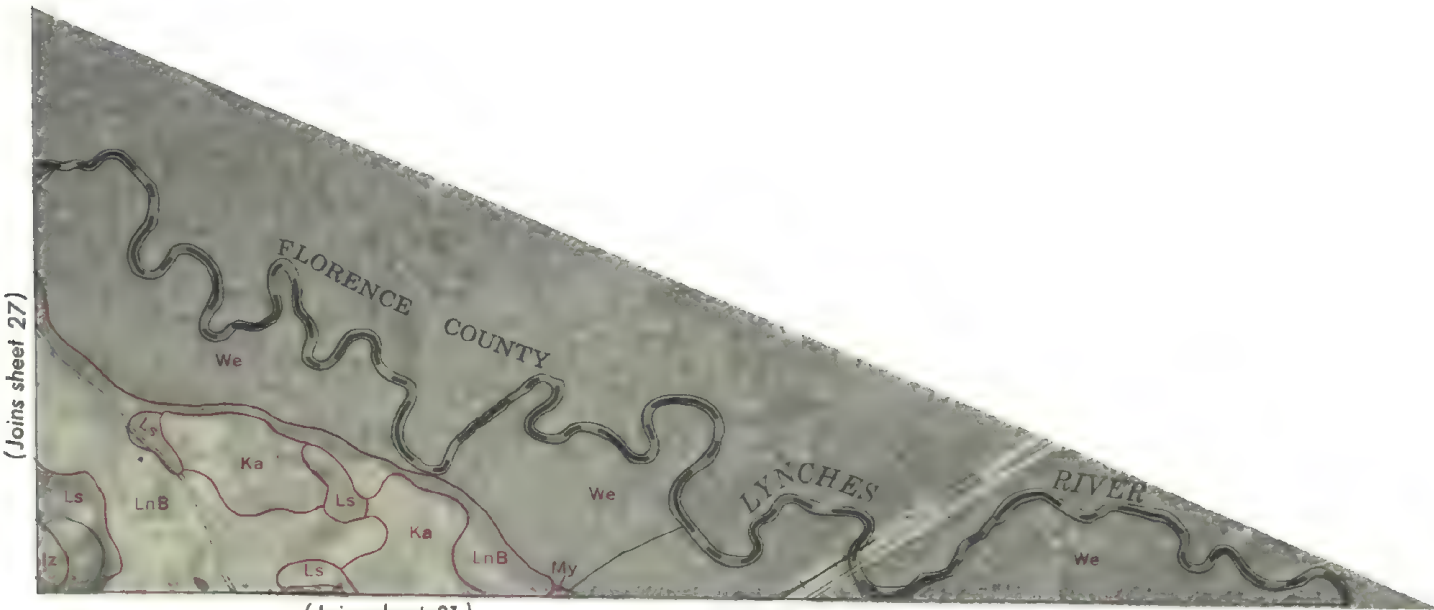


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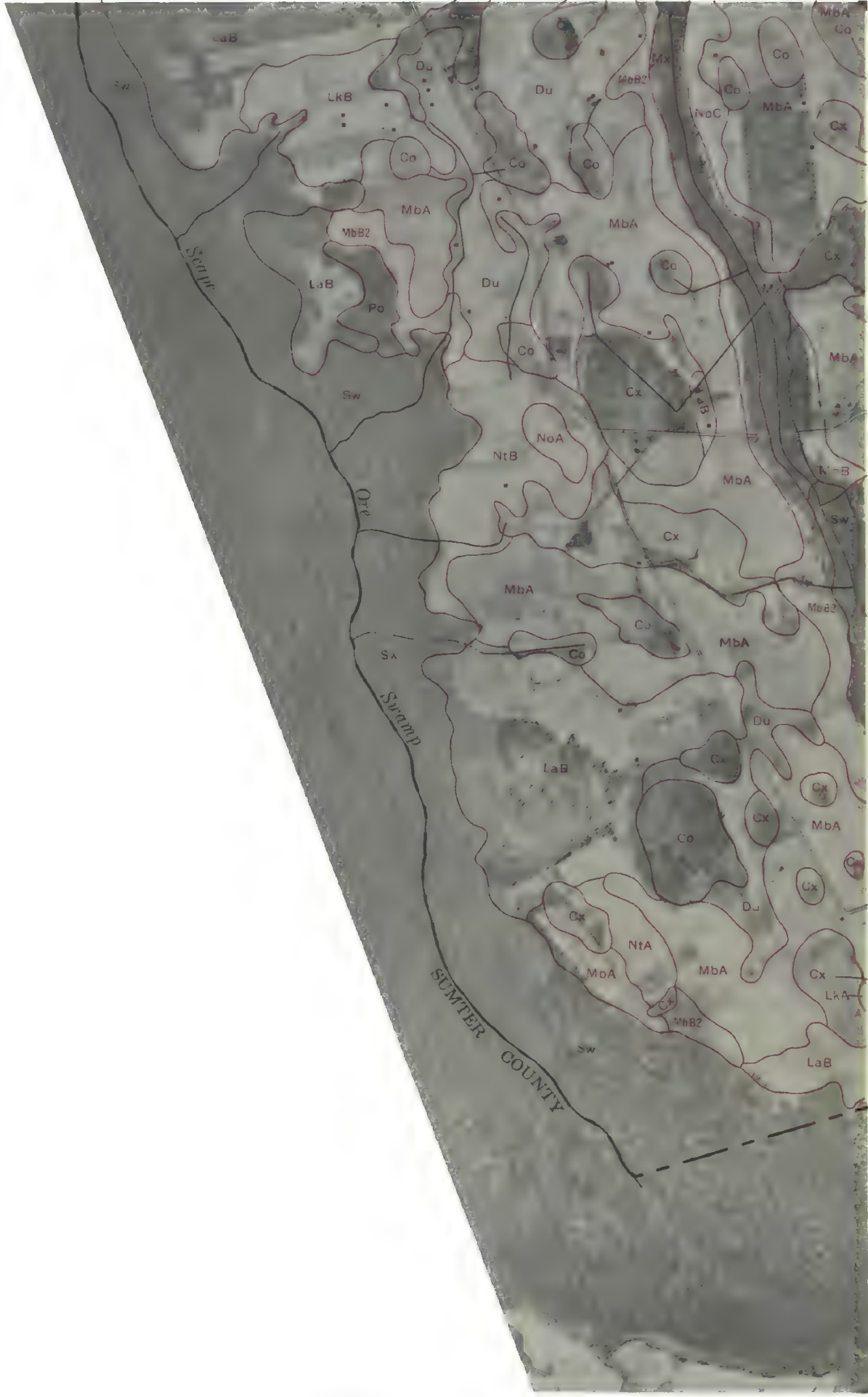
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(Joins sheet 28)



(Joins sheet 27)

(Joins sheet 31)



(Joins sheet 33)



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(Joins sheet 32)



(Joins sheet 34)

34

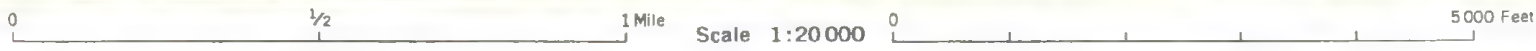
(Joins sheet 30)



(Joins sheet 33)

(Joins sheet 35)

(Joins sheet 36)



(Joins sheet 31)



(Joins sheet 34)



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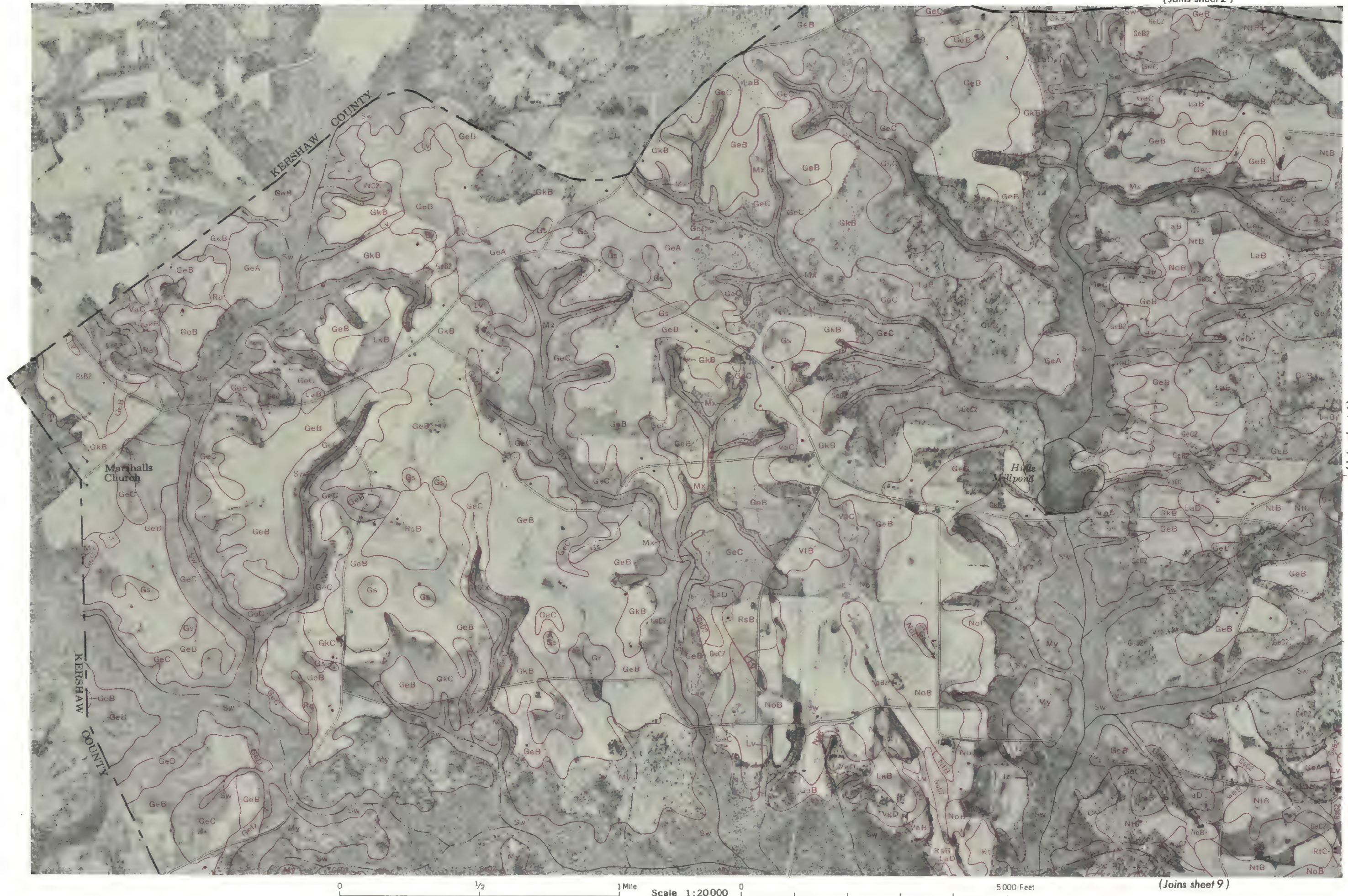
4



(Joins sheet 3)



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6



(Joins sheet 5)



(Joins sheet 7)

(Joins sheet 10)



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(Joins sheet 6)



(Joins sheet 8)

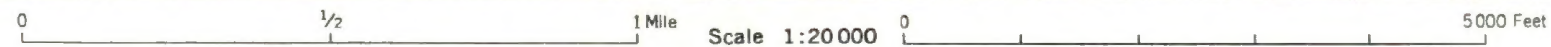
(Joins sheet 11)



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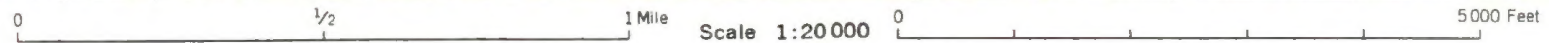


(Joins sheet 10)



(Joins inset, sheet 13)

(Joins sheet 14)



Scale 1:20 000

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GUIDE TO MAPPING UNITS

[See table 8, p. 50 for the approximate acreage and proportionate extent of the soils. See tables 5, 6, and 7, pp. 36, 44, and 48, for information on the engineering properties of the soils]

Map symbol	Mapping unit	Capability unit		Woodland suitability group	
		Page	Symbol	Page	No. Page
Bp	Borrow pits.....	51	VIIIs-2	18	12 29
Ca	Cahaba sandy loam.....	51	I-1	11	2 26
Co	Coxville sandy loam.....	52	IIIw-2	15	5 27
Cx	Coxville loam.....	51	IIIw-2	15	5 27
Du	Dunbar sandy loam.....	52	IIw-2	12	6 27
EnB	Eustis sand, 0 to 6 percent slopes.....	52	IVs-1	17	1 26
EsA	Eustis sand, shallow, 0 to 2 percent slopes.....	52	IIIIs-1	16	1 26
EsB	Eustis sand, shallow, 2 to 6 percent slopes.....	53	IIIIs-1	16	1 26
EsC	Eustis sand, shallow, 6 to 10 percent slopes.....	53	IVs-1	17	1 26
FaA	Faceville loamy sand, 0 to 2 percent slopes.....	53	I-2	11	4 27
FaB	Faceville loamy sand, 2 to 6 percent slopes.....	53	IIe-2	12	4 27
FaB2	Faceville loamy sand, 2 to 6 percent slopes, eroded.....	53	IIe-2	12	4 27
FaC2	Faceville loamy sand, 6 to 10 percent slopes, eroded.....	53	IIIe-2	14	4 27
GeA	Gilead loamy sand, 0 to 2 percent slopes.....	54	IIe-2	13	2 26
GeB	Gilead loamy sand, 2 to 6 percent slopes.....	54	IIe-4	12	2 26
GeB2	Gilead loamy sand, 2 to 6 percent slopes, eroded.....	54	IIIe-4	14	2 26
GeC	Gilead loamy sand, 6 to 10 percent slopes.....	55	IIIe-4	14	2 26
GeC2	Gilead loamy sand, 6 to 10 percent slopes, eroded.....	55	IVe-4	16	2 26
GeD	Gilead loamy sand, 10 to 15 percent slopes.....	55	IVe-4	16	2 26
GeD2	Gilead loamy sand, 10 to 15 percent slopes, eroded.....	55	Vle-2	18	2 26
GkB	Gilead loamy sand, thick surface, 2 to 6 percent slopes.....	55	IIIIs-4	16	2 26
GkC	Gilead loamy sand, thick surface, 6 to 10 percent slopes.....	55	IIIe-4	14	2 26
Go	Goldsboro loamy sand.....	55	IIw-2	12	6 27
Gr	Grady loam.....	56	IIIw-2	15	5 27
Gs	Grady sandy loam.....	56	IIIw-2	15	5 27
Gu	Gullied land.....	56	VIIIs-2	18	12 29
Iz	Izagora sandy loam.....	56	IIw-2	12	6 27
Ka	Kalmia loamy sand.....	57	I-1	11	2 26
Kt	Kalmia loamy sand, thick surface.....	57	IIIs-1	13	2 26
LaB	Lakeland sand, 0 to 6 percent slopes.....	58	IVs-1	17	1 26
LaD	Lakeland sand, 6 to 15 percent slopes.....	58	IVs-1	17	1 26
LkA	Lakeland sand, shallow, 0 to 2 percent slopes.....	58	IIIIs-1	16	1 26
LkB	Lakeland sand, shallow, 2 to 6 percent slopes.....	58	IIIIs-1	16	1 26
LkC	Lakeland sand, shallow, 6 to 10 percent slopes.....	58	IVs-1	17	1 26
LnB	Lakeland sand, terrace, 0 to 6 percent slopes.....	58	IVs-1	17	1 26
LoC	Lakewood sand, 0 to 10 percent slopes.....	58	VIIIs-1	18	7 28
Ls	Leaf fine sandy loam.....	59	IVw-2	17	5 27
Lv	Local alluvial land.....	59	IIw-1	12	10 29
Ly	Lynchburg sandy loam.....	60	IIw-2	12	6 27
MaA	Magnolia loamy sand, 0 to 2 percent slopes.....	60	I-2	11	4 27
MaB2	Magnolia loamy sand, 2 to 6 percent slopes, eroded.....	60	IIe-2	12	4 27
MbA	Marlboro loamy sand, 0 to 2 percent slopes.....	60	I-2	11	4 27
MbB	Marlboro loamy sand, 2 to 6 percent slopes.....	61	IIe-2	12	4 27
MbB2	Marlboro loamy sand, 2 to 6 percent slopes, eroded.....	61	IIe-2	12	4 27

Map symbol	Mapping unit	Capability unit		Woodland suitability group	
		Page	Symbol	Page	No. Page
MbC2	Marlboro loamy sand, 6 to 10 percent slopes, eroded.....	61	IIIe-2	14	4 27
Mx	Mixed alluvial land.....	61	Vw-2	18	8 28
My	Myatt sandy loam.....	61	IVw-3	17	9 28
NfA	Norfolk loamy fine sand, 0 to 2 percent slopes.....	62	I-1	11	2 26
NoA	Norfolk loamy sand, 0 to 2 percent slopes.....	62	I-1	11	2 26
NoB	Norfolk loamy sand, 2 to 6 percent slopes.....	62	IIe-1	11	2 26
NoB2	Norfolk loamy sand, 2 to 6 percent slopes, eroded.....	62	IIe-1	11	2 26
NoC	Norfolk loamy sand, 6 to 10 percent slopes.....	62	IIIe-1	14	2 26
NoC2	Norfolk loamy sand, 6 to 10 percent slopes, eroded.....	62	IIIe-1	14	2 26
NtA	Norfolk loamy sand, thick surface, 0 to 2 percent slopes.....	62	IIIs-1	13	2 26
NtB	Norfolk loamy sand, thick surface, 2 to 6 percent slopes.....	62	IIIs-1	13	2 26
NtC	Norfolk loamy sand, thick surface, 6 to 10 percent slopes.....	62	IIIe-5	14	2 26
Ok	Okenee loam.....	63	IIIw-4	15	9 28
OrA	Orangeburg loamy sand, 0 to 2 percent slopes.....	63	I-1	11	2 26
OrB	Orangeburg loamy sand, 2 to 6 percent slopes.....	63	IIe-1	11	2 26
OrB2	Orangeburg loamy sand, 2 to 6 percent slopes, eroded.....	63	IIe-1	11	2 26
OrC2	Orangeburg loamy sand, 6 to 10 percent slopes, eroded.....	63	IIIe-1	14	2 26
Pm	Plummer loamy sand.....	64	Vw-2	18	9 28
Pn	Plummer sand, terrace.....	64	Vw-2	18	9 28
Po	Portsmouth loam.....	64	IIIw-4	15	9 28
Ps	Portsmouth sandy loam.....	64	IIIw-4	15	9 28
Ra	Rains loamy sand.....	65	IVw-3	17	6 27
RsA	Ruston loamy sand, 0 to 2 percent slopes.....	65	I-1	11	2 26
RsB	Ruston loamy sand, 2 to 6 percent slopes.....	65	IIe-1	11	2 26
RsB2	Ruston loamy sand, 2 to 6 percent slopes, eroded.....	65	IIe-1	11	2 26
RsC	Ruston loamy sand, 6 to 10 percent slopes.....	65	IIIe-1	14	2 26
RsC2	Ruston loamy sand, 6 to 10 percent slopes, eroded.....	66	IIIe-1	14	2 26
RtA	Ruston loamy sand, thick surface, 0 to 2 percent slopes.....	66	IIIs-1	13	2 26
RtB	Ruston loamy sand, thick surface, 2 to 6 percent slopes.....	66	IIIs-1	13	2 26
RtC	Ruston loamy sand, thick surface, 6 to 10 percent slopes.....	66	IIIe-5	14	2 26
Ru	Rutlege loamy sand.....	66	Vw-2	18	9 28
Sw	Swamp.....	67	VIIw-1	18	8 28
VaB	Vaocluse loamy sand, 2 to 6 percent slopes.....	67	IIe-4	12	11 29
VaB2	Vaocluse loamy sand, 2 to 6 percent slopes, eroded.....	67	IIIe-4	14	11 29
VaC	Vaocluse loamy sand, 6 to 10 percent slopes.....	68	IIIe-4	14	11 29
VaC2	Vaocluse loamy sand, 6 to 10 percent slopes, eroded.....	68	IVe-4	16	11 29
VaD	Vaocluse loamy sand, 10 to 15 percent slopes.....	68	IVe-4	16	11 29
VaD2	Vaocluse loamy sand, 10 to 15 percent slopes, eroded.....	68	Vle-2	18	11 29
VaE2	Vaocluse loamy sand, 15 to 25 percent slopes, eroded.....	68	Vle-2	18	11 29
VtB	Vaocluse loamy sand, thick surface, 2 to 6 percent slopes.....	68	IIIIs-4	16	11 29
VtD	Vaocluse loamy sand, thick surface, 6 to 15 percent slopes.....	68	IVe-4	16	11 29
VyC3	Vaocluse sandy loam, 6 to 10 percent slopes, severely eroded.....	68	Vle-2	18	11 29
Wa	Wahee fine sandy loam.....	69	IIIw-3	15	3 26
We	Wehadkee silt loam.....	69	VIw-1	18	8 28